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QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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Cover Picture

S Mordan & Co of London made this postal scale between 1840 and 1871, when "postages" signified the rate to be paid. Each "postage" weighed ½ oz and required a payment of 1d (one penny) which, when that rate was introduced, created a huge increase in letter-writing. A penny was roughly the equivalent of 6½ dollars, so it was by no means cheap, but with the huge numbers of people moving from the countryside to the new industrial towns, letter writing kept people in touch with their families.

The A-frame of this example was a very rare 3-dimensional design, instead of Mordan's normal flat designs.

ex-David Thomas Collection.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

How I Delighted My Father

BY ANDREW CRAWFORTH

As I lay in my hospital bed, I remembered back to events nearly 30 years ago. I was just out of my 'teens' and enjoying the challenge of being a novice antique dealer (I had to do something to pay for my antique-collecting habit and oh! food and living of course). My objective that week was to go to the famous giant antique fair at Newark, some 130 miles away and get some interesting antiques to do-up and sell, with hopefully, something for my collection. Getting there and back on my tiny motorcycle involved stamina, but more of that later.

When I eventually got to the fair, I was several hours too early and later discovered that it didn't officially open till 10 am. But not knowing this, at 4:30 am, I rode up to the gate, shaking with cold, my nose running and my legs as stiff as boards. I didn't have a ticket for the fair and I had no plan to wrangle my way in early. Fortunately, the guard on the gate assessed me and my motorcycle through the warm guard room window and decided I must be one of the caterers, not an antique buyer or seller. He waved me straight through the gate with a cheery "*Caterers straight through mate*"! How lucky was I, getting in while the dealers were unpacking, before the crowd and within minutes, I got to a stall with an interesting scale, but unfortunately, it was more money than I had.

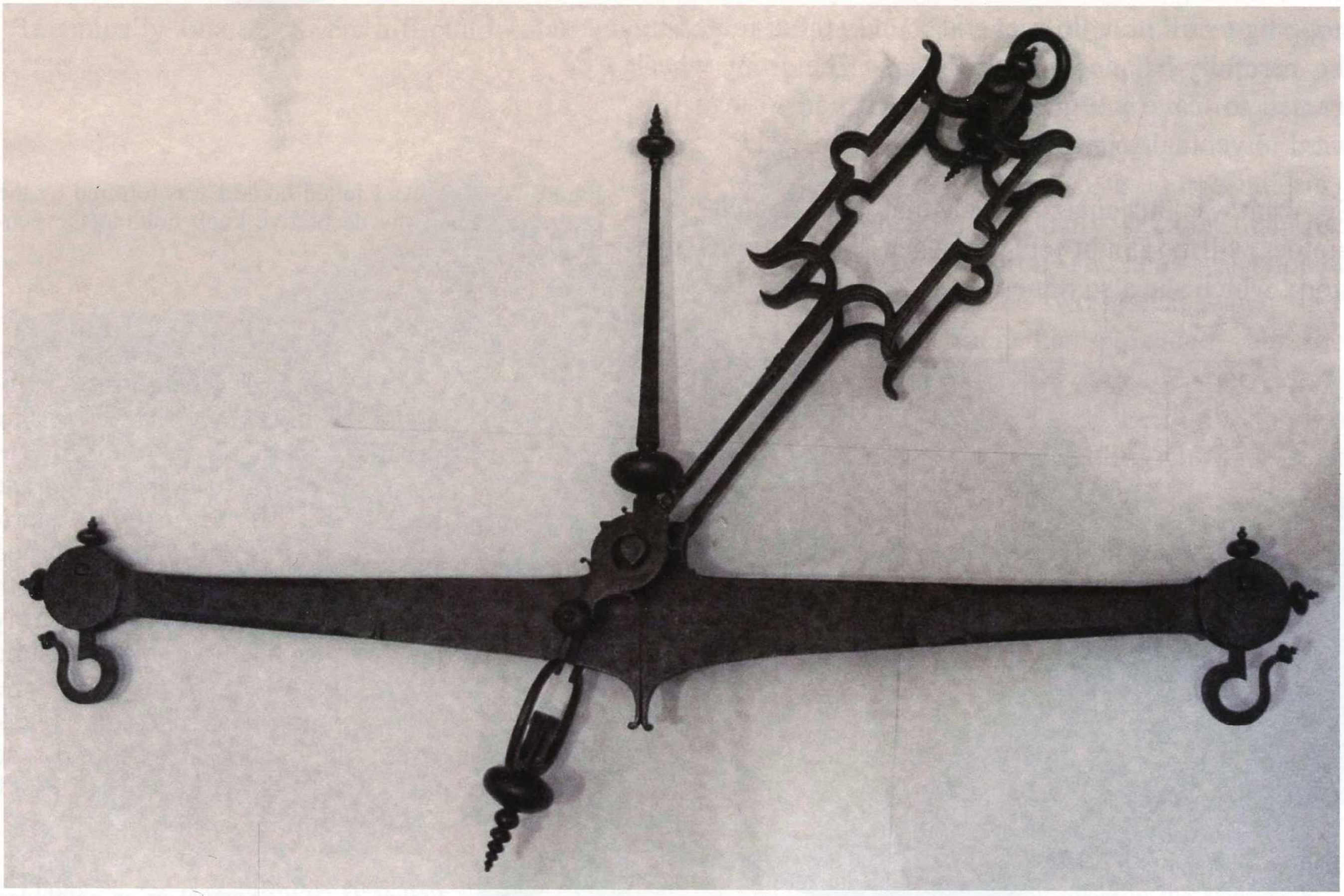


Figure 1. ⩓⩓ This 36 inch, high-quality, 18th century English beam had the remains of paint and rust obscuring some odd letters that I could not decipher.

Lying on the stall in front of me was a large trade beam about 3 feet long, though without its hanging parts. But, what a scale! It definitely looked English 18th century and was of fantastic quality. I had seen that design of sight-hole shears on a trade label in one of my parents' coin scales.

Faintly through the old rust was something written on the beam, *"...m ..ead, ..do.."* It was too early to ring my father, Michael Crawforth, for advice, (I only collected weights.) Still cold and shivering I bargained gently with the seller and managed to get it for the trade price. That was just a little less than all the money I had, leaving barely enough to buy fuel to get back home. Figure 1.

The only way I could carry this monster beam was to get the seller to strap it to my back, with one end up in the air and the pendant finials sticking into my spine. Figure 2. I got on my 'bike and wobbled off towards home. I had an arduous journey that involved stopping to fill up with fuel and food without removing the carefully-balanced 28 lb beam. The front wheel wanted to leave the ground, so that I had to lean forward. Eventually I made it home by 9 am.

So, what was this amazing scale that I had bought? My mother will no doubt tell you when she continues this story, which she also remembers clearly!

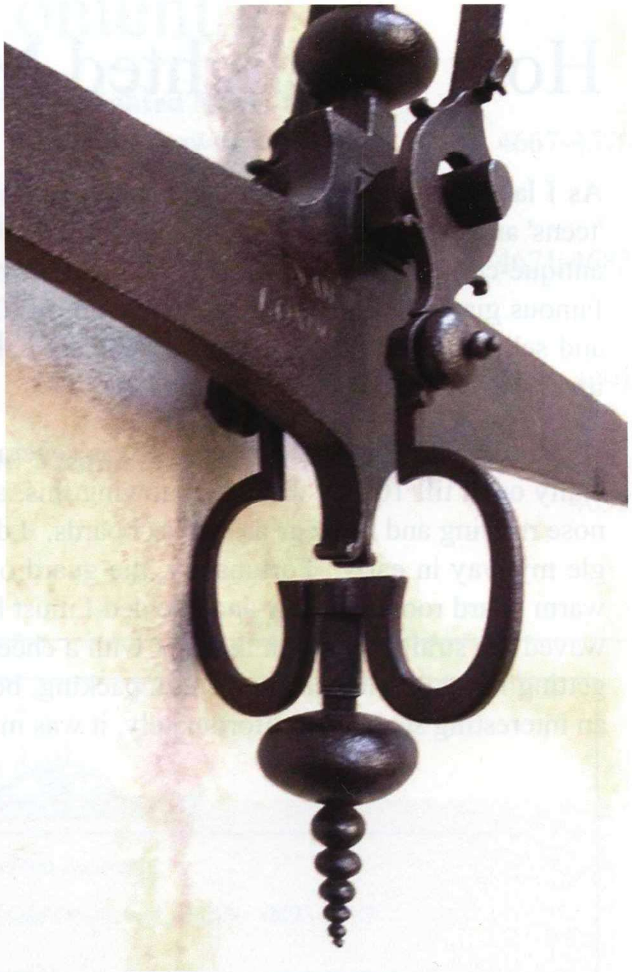


Figure 2. ▲▲ As I jolted home I was tortured by the centre knife-and the decorative knob holding the pendant.

Diana remembers: Michael wrestled the knobbly beam from wobbly, shivering Andrew. After some restorative hot food, they disappeared into the workshop, and the noise of wire-brushing started. Then the lathe was turned on. Hours later they came out, both glowing with pleasure. Not only had they found the complete name engraved into the iron, under the thick coating of rust and black paint, they had also found the date. SAM$^{\text{L}}$ READ LONDON FECIT 1773. Figure 3.

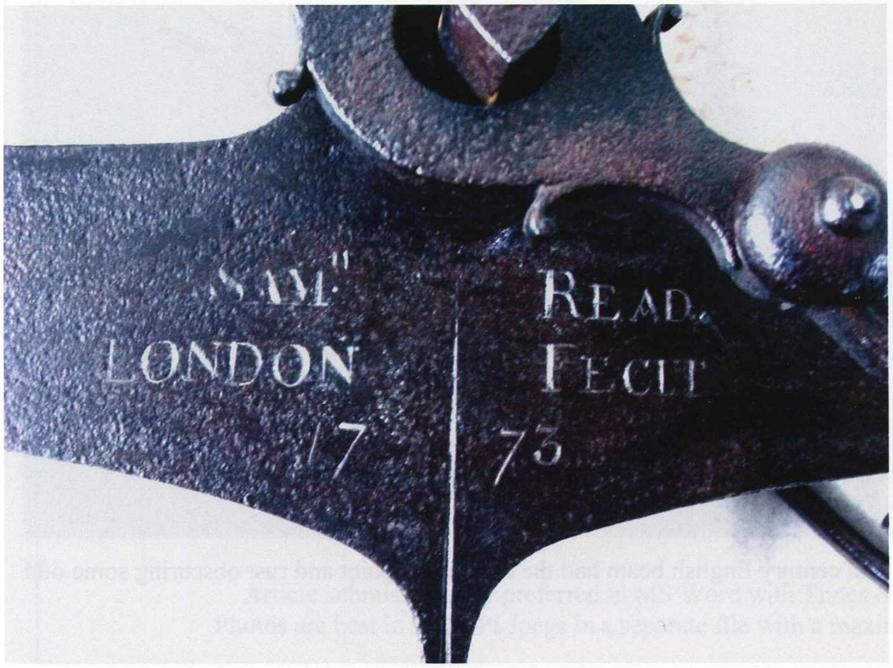


Figure 3. ◀◀ Samuel or an employee engraved the iron very skilfully. But nobody has explained why the largest beams were dated.

The date was exciting to them as historians, but the method of manufacture excited them as technicians. The beam (Figure 1) and the shears were made from big bars of wrought-iron, hammered and fire-welded, but all the fancy bits were made separately with hand-cut screws (Figure 4). Each piece went into its own socket, and because each was individually made, fitted *only* into its own hole.

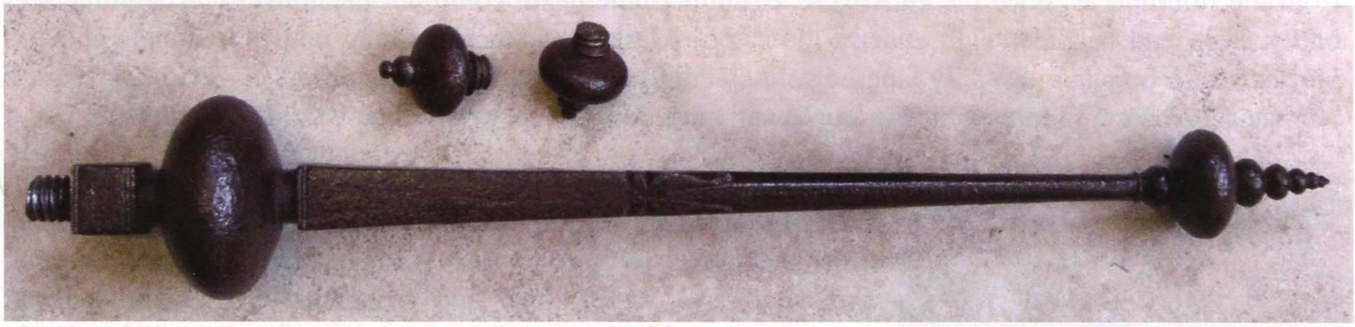


Figure 4. AA The up pointer has a finial that matches the style of the down pointer shown in figure 5. Each small knob has slightly different screw threads.

The beam ends (Figure 5) were classically English, with circular boxes decorated with knobs and finials. This method of protecting the end bearings was probably invented just when Samuel was starting to work. (Certainly Daniel Thompson was making them before he died in 1743). Usually box ends were used on small coin scales, but maybe they were also used on bigger scales, and we just lack the evidence. But Andrew brought us evidence of one large beam with box ends!

Technically, box ends were difficult to make accurately. Each arm of the beam ended in a semicircular arc (like a swan-neck, but without an enlarged tip or a hole) with a round cheek applied to each side of the arc. The cheeks had a square hole cut in them, fractionally smaller than the ends of the knife. The hook was slipped up between the two cheeks when they were hot (and thus expanded), and the knife was jammed into the square hole in the cheek, through the ring at the top of the hook and out through the hole in the other cheek. The cheeks cooled down, trapping the knife securely.

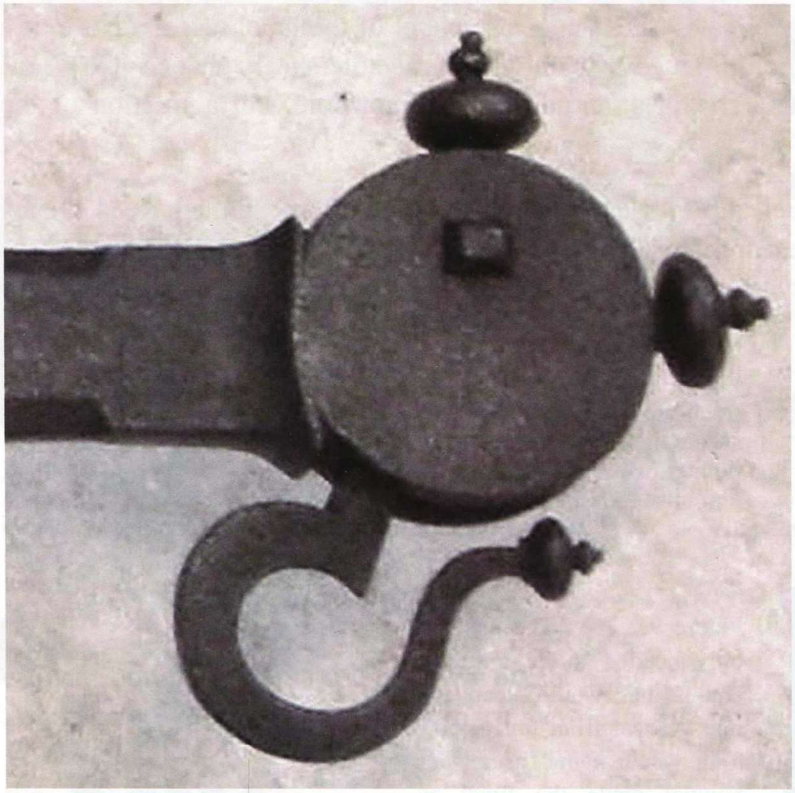


Figure 5. AA English box ends were used only on expensive, well-finished beams. The decorative knobs were not essential, but did make attractive ends.

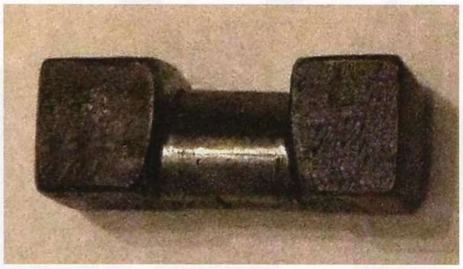


Figure 6. AA This knife comes from a much later beam made in the same style as Samuel's. The whole unit is 1¼ x $^{8}/_{10}$ x $^{9}/_{10}$ inches, (32 x 12 x 13 mm, with the pippin steel $^{9}/_{10}$ inches (10 mm) long.

Because the ends of the knife were square, the knife could not slip or twist in the holes. As the knife was only trapped in the cheeks, it was possible to hammer out a defective knife and replace it.

So why was it difficult to make box ends accurate? Firstly, the arcs had to be exactly the same distance from the fulcrum, as, once the ends were assembled, the beam could not be adjusted for length. Secondly, each end had to weigh exactly the same, so that accurate weighing could be done. The end blocks had to be just minimally tapered so they could be hammered into the cheeks. The hooks had to be precisely matching in weight (Figure 7), and have sturdy steel bushes that would not rust.

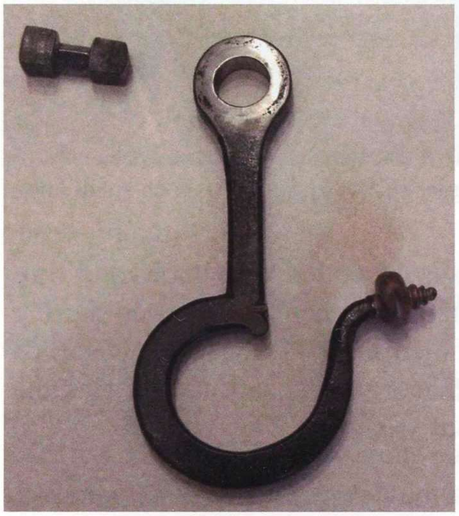


Figure 7. ⮝⮝ This hook comes from the later beam, made 120 years after Samuel's beam, but in exactly the same style. It was an Inspectors' beam, so needed to be extremely accurate. Note the steel bush has not rusted, whereas the iron surrounding the bush has rusted over the 127 years it has existed.

We knew a little about Samuel Read, but we didn't realise how incredibly fortunate we were to have a dated iron beam. Iron is difficult to engrave, so English iron beams were usually painted with the details of maker, town and occasionally, the date, but, of course, paint chipped and flaked so was often over-painted. So why would Samuel engrave his name? Because he wanted the beam for his own use? Because he engraved his most expensive beams intended for the use of Inspectors? [1773 predated official Inspectors of Weights & Measures, but many officials had the obligation to check weights, especially in Markets.]

Andrew was correct in remembering a trade label with a picture of that design of shears. We had bought a coin scale (when we first started collecting) by Sewell & Young, whose shop sign was "The Hand & Scales". In the centre panel of the label was a picture of a hand holding a coin scale with sight-hole shears shaped like a lantern, exactly like Samuel Read's sight-hole, but a fraction of the size.

Michael and I discovered much more about Samuel Read during our research into scientific instrument makers, and the more we learned, the happier we became. But every time we discussed the beam, Andrew's heroism grew. Who else has a son who would suffer such pain to aid his parents knowledge?

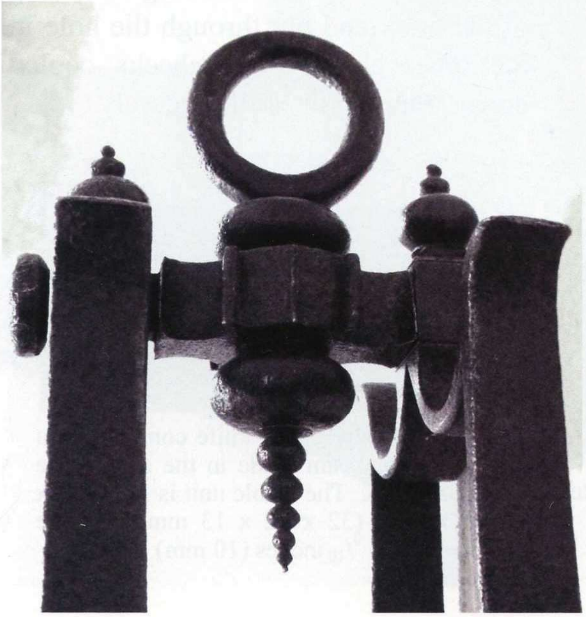
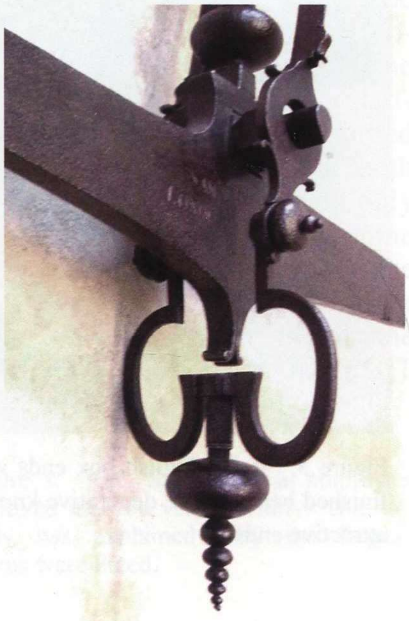


Figure 8. ⮜⮜ The down pointer hidden in the lantern shears lines up with the up pointer when the beam is in equilibrium.

Figure 9. ➤➤ The pendant only needed to be a heavy chunk that would keep the line vertical from top to bottom when being used, but Samuel made the finial as decorative as all the other parts. Some poor apprentice probably spent many hours filing and polishing.

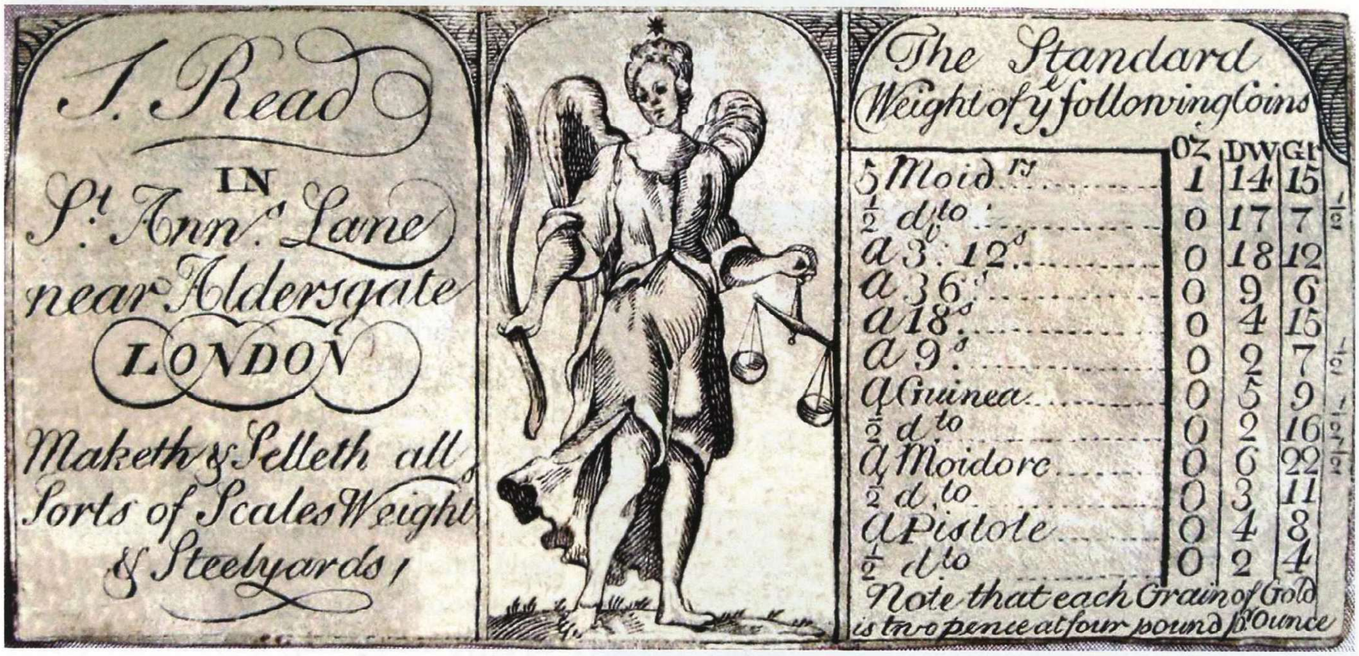


Samuel Read's Scales

BY DIANA CRAWFORTH-HITCHINS

Samuel Read started life as the eldest son of a Kidderminster cloth-worker, and at 19 went to London to be apprenticed in the scale trade in 1728.[1] Samuel joined the workshop of John Neale who already had three apprentices in training, including William Stiles and George Key, and took on William Gale while Samuel was still his apprentice, so Samuel was already gathering a group of friends who would also become Masters eventually.

John Neale trained him for 6 years, then turned him and William Gale over [that is; moved them into another Master's workshop for further training] to John Lane, who had been trained by John Neale before Samuel came to London. Nine months later, Samuel was turned over again, to Benjamin Hart, who came from famous John Snart's workshop. Samuel could not have had a better training. He had his own shop within a year of being freed in 1735. Was he bank-rolled by his father or by his late masters, all of whom vouched for his skill when he was freed?



I. Read
IN
St. Anns. Lane
near Aldersgate
LONDON
Maketh & Selleth all
Sorts of Scales Weights
& Steelyards.

The Standard
Weight of ye following Coins

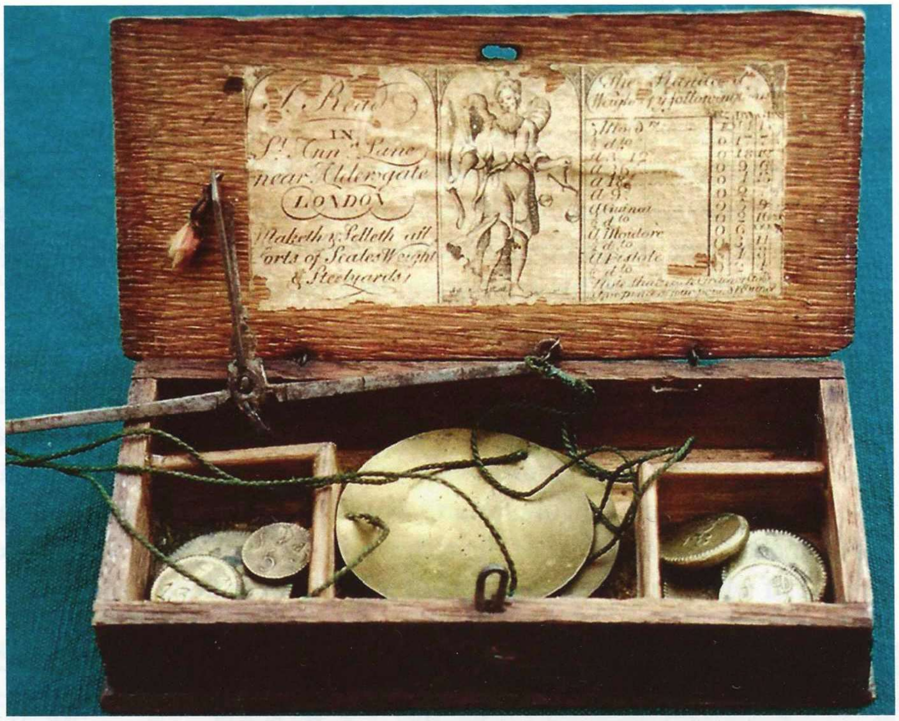
	OZ	DW	Gr
5 Moidrs	1	14	15
½ dto	0	17	7 ½
a 3. 12s	0	18	12
a 36s	0	9	6
a 18s	0	4	15
a 9s	0	2	7 ½
a Guinea	0	5	9 ½
½ dto	0	2	16 ½
a Moidore	0	6	22 ½
½ dto	0	3	11
a Pistole	0	4	8
½ dto	0	2	4

Note that each Grain of Gold is twopence at four pound pr. Ounce

Figure 1. ⮝⮝ This trade card dates between 1736 and about 1750 and was stuck into his small boxes. Samuel used this address for his home and shop, in spite of owning the larger premises a few doors along, at the corner with St Martin Le Grand. The list of coins includes the French Pistole & ½ Pistole, coins that were rarely used by this period. It does not include the smallest of the "long set", the 4/6 Portuguese Piece.

Samuel bought his first house-cum-workshop in 1736 called the "*Angel & Scales*" in St Anne's Lane, Aldersgate;[2] (in the 17th century there had been five other scale-makers in St Anne's Lane.) (Figure 1) Samuel Read's shop was about a 1-minute walk away from that of his first master, John Neale at the "*Angel & Star*".

Figure 2. ➢➢ This made-up-box (MUB) was the cheapest type of coin scales. The wood was thick compared with most MUBs, and Samuel used simple wire hinges. The old-fashioned beam of square section, with swan-neck ends and high cut-away arches below the fulcrum, gives us no hint of the superlative maker he later became.



Samuel had a particularly close relationship with John Lane, who turned over two of his partly trained apprentices to Samuel, (turning over apprentices who were already nearly trained was a practice followed by many scale-makers who wanted to help young and inexperienced masters.) Because John Lane himself had also been trained by John Neale, he knew exactly how much Samuel had learned, and could thus be relied on to enhance the final training of those apprentices. Samuel's father obviously respected him as he sent Samuel's younger brother Joseph to London to be trained by him.

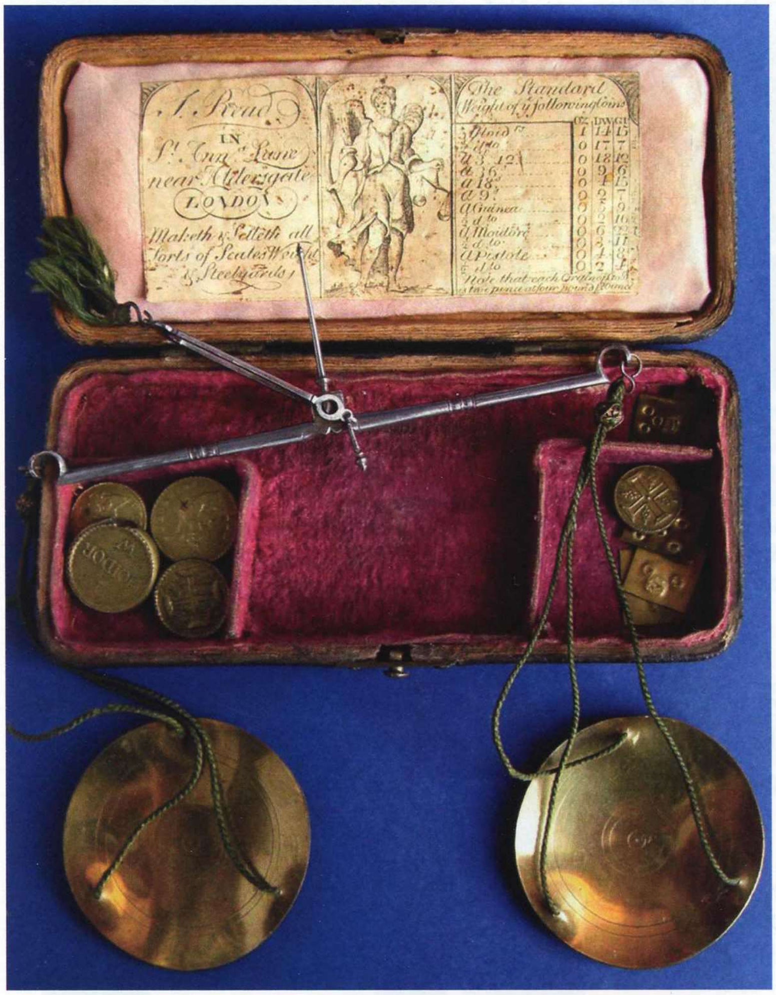


Figure 3. ≺≺ Samuel also made high quality coin scales. The black shagreen case was fastened with a catch instead of a cheap hook. The lid was padded with sheeps' wool, covered with fine pink silk. The box was lined with red, hand-cut silk velvet, and loaded with coin weights for the "long set" of coins current in England, (Withers 1418, 1425, 1441,1451 & 1452). The grain weights were stamped with a lion, so were verified by Goldsmiths' Company. The beam was round section with swan-neck ends, and the green silk cords were decorated with gold balls. The green silk tassel made it easy to hold the beam up without touching the shears. The pans were scribed with five circles.

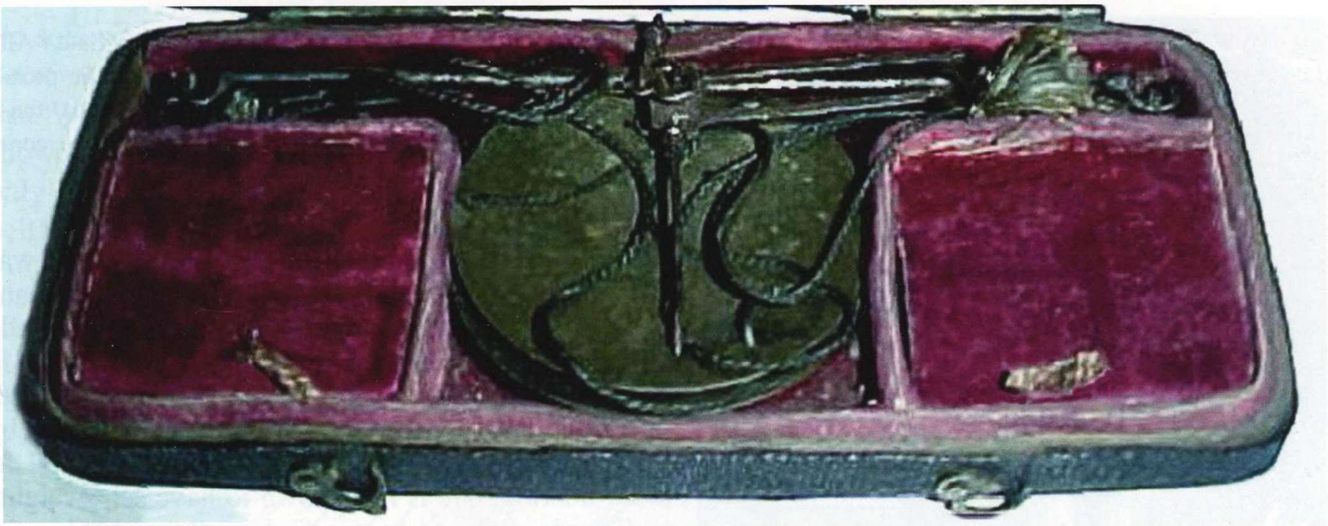
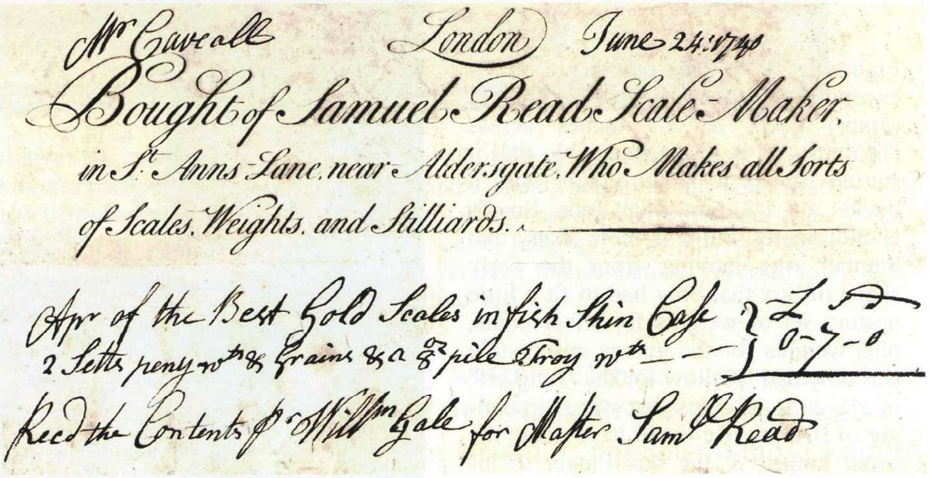


Figure 4. ⮝⮝ Another of Read's shagreen boxes had velvet-covered lids over the weight pens, giving a very luxurious appearance. This is the only set with lidded pens known to the author.

In addition to their professional closeness, John Lane and Samuel Read were both Governors of Bridewell & Beth'lem Royal Hospitals, that necessitated frequent committee meetings in order to run both institutions reliably and conscientiously. (They introduced Henry Peers, an apprentice of Samuel's, to be a Governor later on.)

Figure 5. ➤➤ This receipt shows that in 1748 Samuel was no longer stating that he was at the *Angel & Scales*, although he was still paying Land Tax on that house/shop. He stated that he made Weights, but it is more likely that he bought his weights from a local brass-founder such as John Warner, and used his most precise scales to adjust them for sale in his boxes. William Gale, now his journeyman, wrote "*A pr of the Best Gold Scales in fish Skin Case, 2 setts penywts & Grains & a 8oz pile Troy Wts £0..7s..0d. Rec'd the Contents of Willm Gale for Master Saml Read*". Note the misspelling of Mr Cabell's name. Note that it is difficult to read the date, which is probably 1748, but might be 1740.



Mr Caveall London June 24:1748

Bought of Samuel Read Scale-Maker,
in St Anns-Lane, near Aldersgate, Who Makes all Sorts
of Scales, Weights, and Stilliards.

A pr of the Best Gold Scales in fish Skin Case
2 Setts peny wts & Grains & a 8oz pile Troy wts — — } L s d 0-7-0

Recd the Contents ꝑ Willm Gale for Master Saml Read

Within 4 years, Samuel had a second, larger house on the corner of St Ann's Lane and St Martin Le Grand. The house/shop was called the "*Angel & King's Arms*". (See Figure 8.) These houses were only about 70 years old, the previous houses having burned down in the Fire of London in 1666. Scale-makers used various shop-signs associated with scales, but no other maker incorporated the King's Arms with an angel. As the shop was within a few yards of the looming Gate leading out of the City, Aldersgate, rebuilt in 1616, with ornamentation honouring James I, and with a huge bas-relief of the King's Arms at the top, we presume that Samuel wanted to identify his shop with that spot on St Martin Le Grand. See Figure 6. But was it coincidence that his great rival in the trade, Samuel Freeman II, maker to King George III, used the King's Arms as his shop sign?

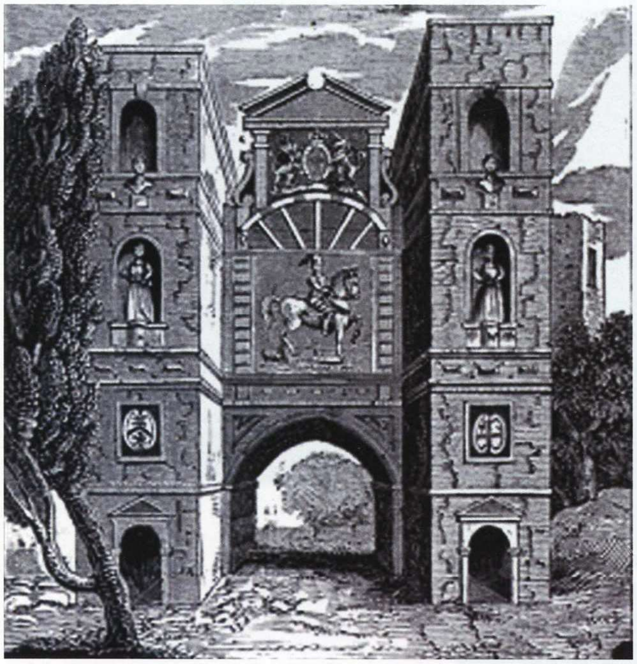
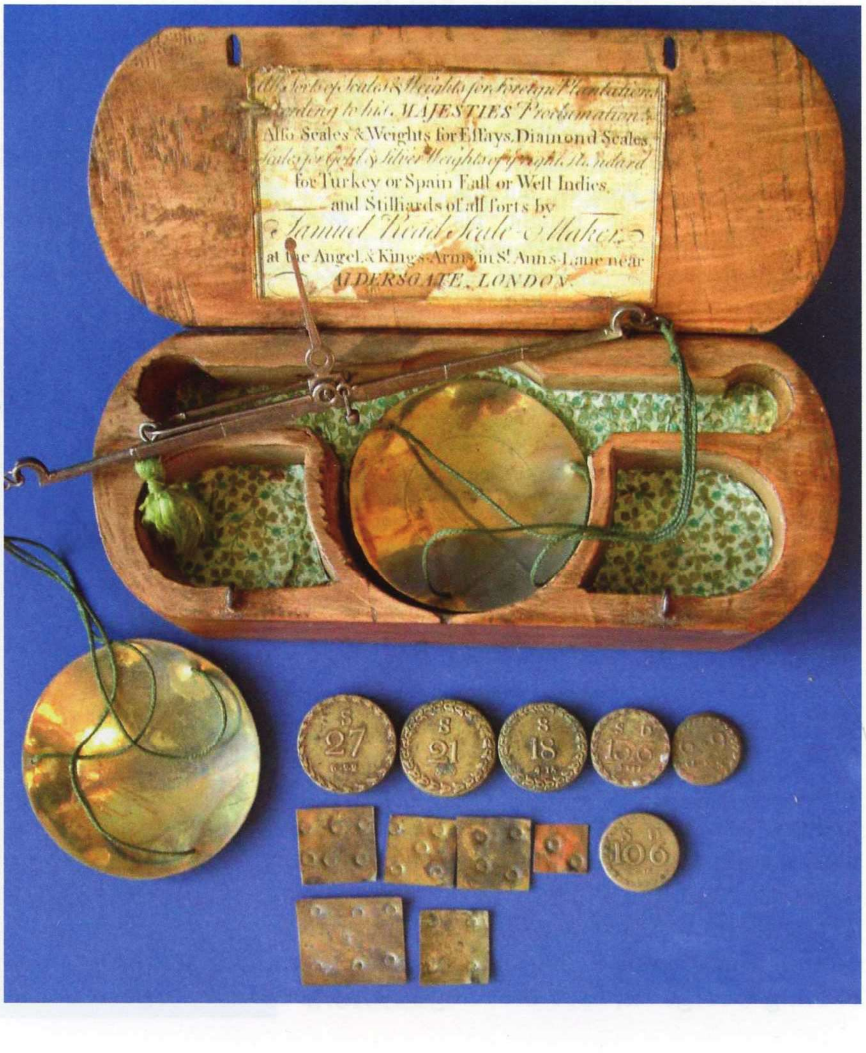


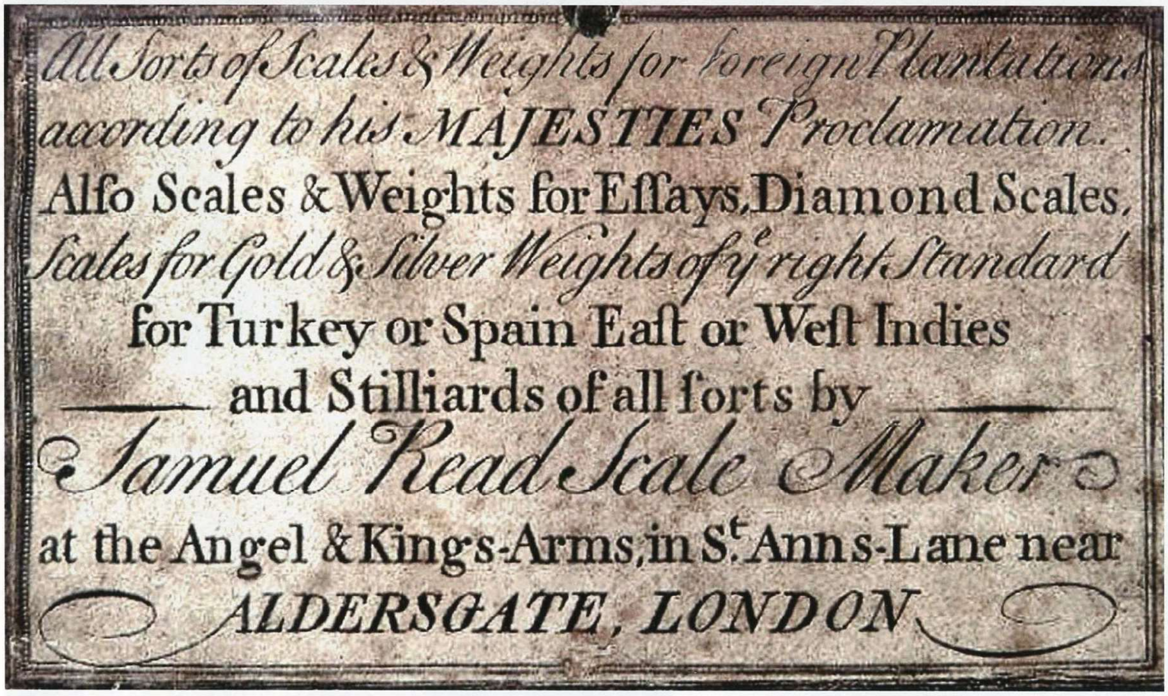
Figure 6. ≺≺ The King's Arms at the top of the Gate. All the gates through the walls of the City caused traffic problems, but pedestrians could walk through the side tunnels. The walls were deteriorating, but people were conservative, and seldom wanted the gates to be demolished.

We know little of Samuel's early work, but he was gaining a good reputation, as the Mayor of St Albans ordered a set of Standard Weights that Samuel made and sent to the Exchequer to be verified in 1740. Samuel must have been respected for his precision in adjusting weights (probably cast for him by one of the Brass Founders in London), as well as scale-making. He is not known to have sent weights to Founders' Co. to be verified, so he probably specialised in weights that were not for trade. He offered coin weights, carat weights for diamonds, Troy weights for bullion and Standard weights for official use. In the receipt for Mr. Cabell, (figure 5) "*a pile of Weights*" is mentioned. This was the common term for nesting weights. (Huge numbers of piles of weights were made by John Warner, who lived about five minutes' walk north of Samuel's corner shop, Warner made weights for sale to scale-makers.)

Figure 7. ➢➢ This coin scale box is exceptionally deep being 1½ inches (3mm) deep, & 5¾ inches across (145mm). It is just conceivable that it started life as a chondrometer with a bucket of 1/8 pint, like John Snart's chondrometer, but it is more likely that Samuel was moving from the early shape of box that only had to fit a little nesting set of weights for silver coins, plus weights for the guinea and pistole and now had to allow for the "long set" of eleven gold coins that were circulating in Britain. He could have made the beam longer, & the box longer to increase capacity, or he could increase the height of the box. The box contained weights of Withers' code 1740i, 1750e, 1751e, 1755g & 1776c & f. The old-fashioned beam was square section, with the flat pointer with a hole near the fulcrum, that is usually thought to have been no longer used by 1740. This highlights a problem for historians of metrology. Did an antique dealer add an old beam to a box, or were old-fashioned beams made for much longer than we thought?


ording to his MAJESTIES Proclamation &
Alſo Scales & Weights for Eſſays, Diamond Scales
for Turkey or Spain Eaſt or Weſt Indies,
and Stilliards of all ſorts by
Samuel Read Scale Maker,
at the Angel & Kings Arms in St. Ann's Lane near
ALDERSGATE, LONDON.
27
21
18
106

He sold scales to Dr. William Cabell (1699-1774), a plantation owner in Virginia,[5] probably when the doctor was visiting London; then Samuel sent the receipt to Virginia. See Figure 5. This bill showed that William Gale continued to work for Samuel Read after he was freed 11 years earlier. It also showed that William Cabell bought scales to weigh coins (i.e. using pennyweights & grain weights) not only suitable for weighing English currency, but potentially, any other currency, although in 1740 Cabell was still using English currency to pay his troops and workmen.



All Sorts of Scales & Weights for Foreign Plantations
according to his MAJESTIES Proclamation.
Alſo Scales & Weights for Eſſays, Diamond Scales,
Scales for Gold & Silver Weights of ye right Standard
for Turkey or Spain Eaſt or Weſt Indies
and Stilliards of all ſorts by
Samuel Read Scale Maker
at the Angel & Kings-Arms, in St. Anns-Lane near
ALDERSGATE, LONDON

Figure 8. AA This trade label gives the customer (and us) a lot of useful information. Samuel was offering weights for Foreign Plantations, particularly those in America and Ireland, because both countries were using English coins that needed checking. His scales for Essays (Assaying) are extremely rare and will be dealt with in a forthcoming article. He made many diamond scales, judging by the survival rate, but scales & weights for Turkey, Spain, East or West Indies, have not yet been found. Samuel reverted to the old-fashioned spelling of stilliards, none of which have been identified yet.

In 1742, the Royal Society asked Samuel to make two sets of Troy weights (each set comprising a 1 lb, 8 oz down to ¼ oz, 5 pennyweights down to ½ pennyweight and tiny weights from 6 grains down to ¼ grain) and two 1 lb Avoirdupois weights, all as nearly identical in weight as possible to those held by the Exchequer and the Mint, one example of each to be sent to Paris and the second sets to be kept in the archives of the Royal Society.[6] Samuel used his own beam to test the existing 15 lb weights down to 1 lb weights, and a smaller beam to test 1 lb down to ½ grain weights. As it is impossible to pick up flat round weights of more than 7 lbs, it is assumed that the 15 lb weights were bell weights with a handle. Samuel Read must have made the very best scales and weights available as the tests were carried out with George Graham and Jonathan Sisson, the most prestigious instrument makers in England who always wanted the most precise equipment.

A few of the weights that were sent to Paris are now held by the Conservatoire National des Arts et Metiers. As the exchange of weights was arranged by George Graham, the weights made by Samuel are labelled as being by "*George Graham en 1737*". The 12 weights were made for 5 pennyweights down to 1 grain. They were cube-shaped, housed in a wooden box with a sliding lid.

Samuel must have been very frustrated by the near-monopoly that Samuel Freeman II had for large contracts (with the Exchequer, the Mint, the Customs, the Bank of England and the Navy Board).[7] Samuel Read was left to make Standards and in 1742, to supply Christ's Hospital. By selling scales to the general public he earned enough money to support himself and his three apprentices.

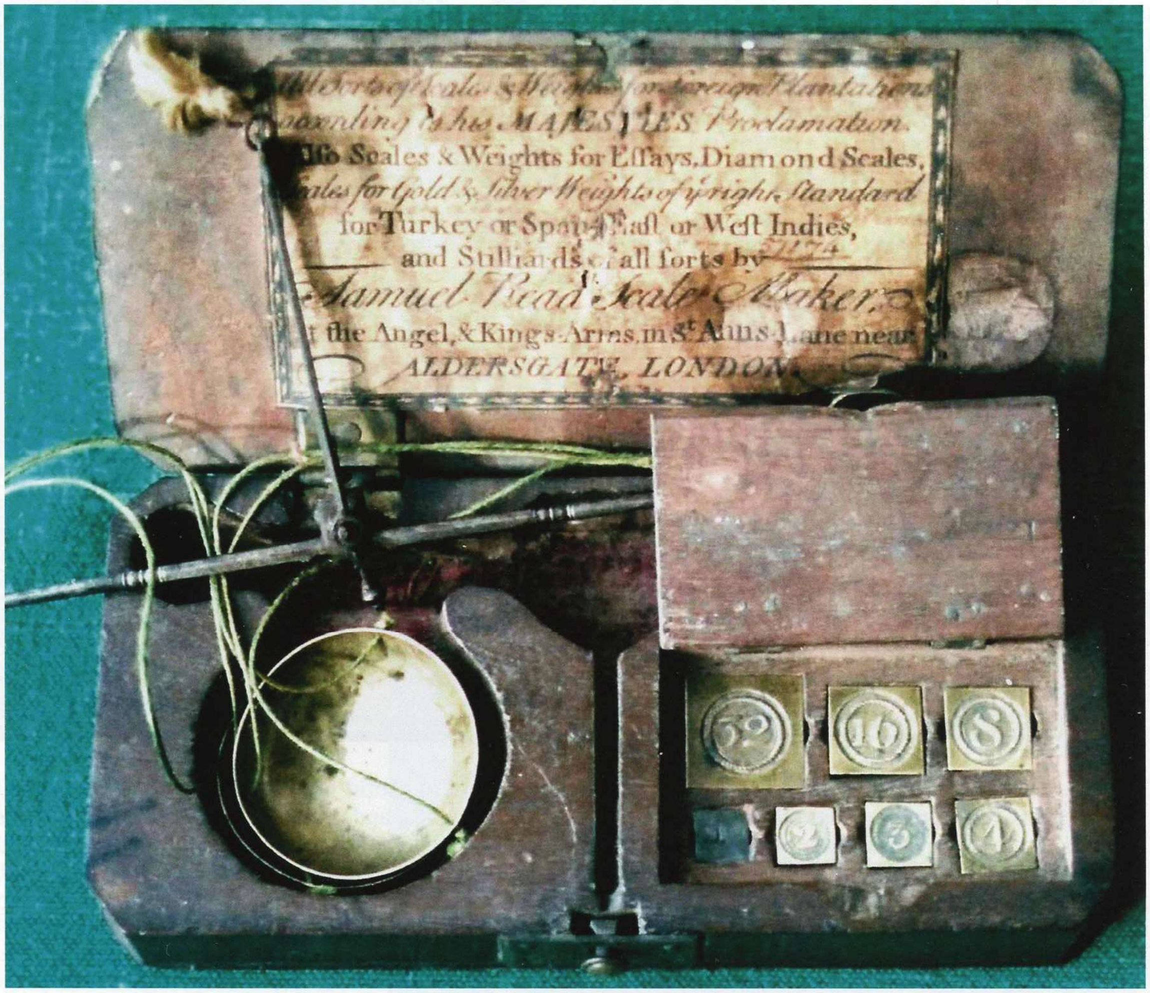

his MAJESTIES Proclamation.
Scales & Weights for Eſſays, Diamond Scales,
for Gold & Silver Weights of y^e right Standard
for Turkey or Spain, Eaſt or Weſt Indies,
and Stilliards of all ſorts by
Samuel Read Scale Maker,
the Angel, & Kings Arms, in S^t Anns Lane near
ALDERSGATE, LONDON.
32
16
8
2
3
4

Figure 9. ⩓⩓ The design of English diamond scales scarcely altered between 1700 and 1850. They always came in a wooden box with a lidded locker for the carat weights. The box usually had the corners cut away. The pans were always hemispherical. Although the makers called them "Diamond scales" they must surely have been used for any precious or semi-precious stones passing through the hands of a jeweller.

In 1744, within 9 years of being freed, Samuel had trained and freed his brother Joseph, who could then have been Samuel's foreman or chief journeyman. Joseph eventually went across the City to Bishopsgate Street, to set up business independently, and took his first apprentice in his own name in 1753.

Samuel had taken on another two apprentices in 1744, so he had four apprentices in his workshops. Four apprentices suggest that he had a journeyman to help him. William Gale signed the receipt for Dr. Cabell in 1748 so possibly Gale was his journeyman from 1739, when he was freed, until 1748. His younger brother Joseph Read would have been a suitable person.

By 1746, the Read family in Kidderminster had sent another youngster to be trained by Samuel, his nephew Josiah Read, who eventually returned to the west of England to be a scalemaker in Worcester. By 1748, Samuel had three more apprentices. That was a busy workshop, especially if Samuel followed the general practice of having one journeyman for every two apprentices! One of the apprentices was the nephew of master scale-maker William Gale, one of Samuel's earliest apprentices & journeyman, and another was turned over to him by Thomas Brooksby Snr. Remarkable confidence was shown by the people who knew Samuel Read.

Samuel led a 3-year battle in London newspapers between himself, Timothy Roberts & William Brind, scale makers who sold weights made by Founders versus John Kirk, engraver, who made ornate coin weights. Samuel advertised "*to prevent imposition the public should compare*" weights made to the Standard by the traditional Founders with the fancy ones made by engravers.

By 1751, Samuel had completed the training of William Brind and freed him. Brind bought a shop just round the corner and had his first apprentice just 2 years later.

No record survives to tell us when Samuel became a Governor of the Bridewell Royal Hospital, but he was already an active participant by 1752.[8] This was an appointment that conferred great prestige on prosperous Londoners, so there were a lot of men wanting to be Governors, but who did little or nothing to aid the charity. The Hospital aimed to improve the lives of the young and the poor. The Governors arranged education and apprenticeships for both boys and girls with the "Art Masters" of the Hospital, got them freed in the City of London (a huge benefit to any future tradesman) and often gave them £10 to start or improve their businesses.[9]

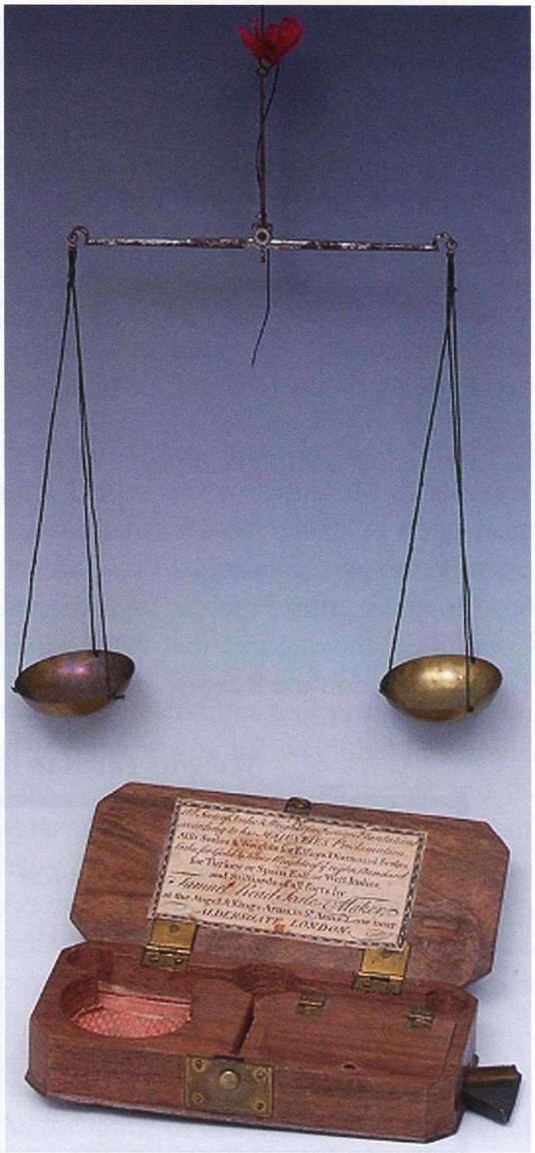


Figure 10. ▲▲ As Samuel stated on his trade card, "*Scales & Weights for Diamonds*". Usually cords (or chains where used) were the same length as the beam, but Samuel made several of his scales with longer cords, making them very elegant. The shovel/tweezers were stored in a slot that went right across the base of the box.

Samuel was a very active Governor until he died, rising to become an Auditor of the Hospital. He examined newly-freed ex-apprentices to see whether they could benefit from a grant, he assessed land and property given to the Hospital, and, unfortunately, he acted as guarantor for Charles Cotton. Cotton later became Treasurer of the Hospital, and when he died in 1762, the accounts were found to be in total disarray, leaving a horrible financial problem for the Hospital. Samuel Read was released from his Security Bond regarding Cotton, but only on the payment of £100. Where did Samuel find £100 in liquid funds?

Another Governor was John Pope, Citizen & Goldsmith of Lombard Street. He and Samuel maintained their friendship, with John being named as joint executor with Mary Read in Samuel's Will. Pope dealt with the estate after Samuel died in 1778.[10]

By 1753, Samuel was prosperous enough to buy 30 acres of land with the right to build a house. This was out in the country, north of the City, near Kentish Lane. By the following year, he had two more properties and another 40 acres of land in the parish of South Mimms.[11]

Like several other scale-makers, Samuel was doing very well. He represented his Ward on the Court of Common Council, the ruling body of the City, a role he fulfilled until shortly before his death. In addition to being on the Council, Samuel was a Churchwarden at his local Church of St Ann & St Agnes.[12]

By 1758, Samuel went before the Parliamentary Committee looking into the discrepancies in the Weights & Measures of the United Kingdom (later called the Carysfort Report). The committee got most of its evidence from Samuel's rival Samuel Freeman II, but Samuel Read was called upon to corroborate the prices calculated by Samuel Freeman, agreeing that each large weight would cost an extra 6d. However, after Freeman and Read had each made such weights of pot-metal, at the direction of the Committee, they agreed that there would be no increase in price.[13] This conclusion fails to match the Table inserted in the Report.

Weights equal to the following Avoirdupois Weights a Set

½ cwt	56lbs	}	½lb	}	Standard		
¼ cwt	28lbs	}	¼lb	}	Oz	256	}
Stone	14lbs	} All of Cast Iron as	2oz	}		128	}
	7	} now proposed	1oz	} All of Brass,		64	}
	4	} formerly 18s,	½	} Price 2s		32	}
now			¼	}		16	} Brass Bell
	2	} proposed 20s.	2 Dram	}		8	} Fashion
	1	}	1	}		4	} £1..17s Pri
			½	}	ce		
						2	}
						2	}
						1	

In 1759, 1760 and 1761, Samuel took even more apprentices, including two turned over from William Newton. Yet another was turned over from Joseph Sommers in 1763. Samuel must have needed more space.[14] In 1760 he had 11 apprentices, so, with five or six journeymen to guide them, his workshops had to accommodate 17 men all working on metal, a noisy and dirty environment. (This estimate assumes that each apprentice served his seven years and no more.)

Samuel subscribed to *The American Negotiator, or The Various Currencies of the British Colonies in America ... as well as the Islands of Barbadoes, Jamaica ... Reduced into English Money*. This was a significant purchase, as any London tradesman who wanted to trade with America needed this information. A huge number of important tradesmen also subscribed.[15] Samuel's sale to Dr. Cabell of Virginia in 1748 would have alerted him to the need for such a reference book, although back in 1748 Cabell was still using English currency to pay his troops and workmen. One box of scales with a trade label of Samuel Read's also had a Table of coins current in America with their values. This suggests that at least one of Read's customers was trading with America, or living in America like Cabell.

Samuel took on yet another responsibility in 1762, becoming one of the Commissioners for the City of London & the Liberty of St Martin's Le Grand and a Commissioner for the Rest of Middlesex (with his brother Joseph).[16] Their task was to collect the Land Tax that every householder had to pay annually. Presumably they delegated the job to honest men who could afford the time to visit every house and record each sum collected.

In 1763, Joseph Sommers I turned over one of his apprentices to Samuel to complete his training. Yet again, confidence was being put in Samuel by another scale-maker. That year, Samuel Read's name appeared in Mortimer's Directory, with the address called 59 St Martin's Le Grand, just a year after the houses were numbered.

Samuel must have felt the loss of his younger brother, Joseph, who died in 1764, aged just 40. Joseph left a widow, Mercy (who later married Clement Meymott, and became a successful scale maker in her own right) and two boys, Samuel and David Joseph Read.

Did Joseph's death make Samuel reconsider his life-style? Samuel bought yet another house and land at the end of Kentish Lane, out in the country, way north of London.

Samuel made his Will in 1766, a practice usually undertaken only days before death, but in Samuel's case, made 12 years before he died. Perhaps he got a fright, and took precautions that proved to be unnecessary! The Will was a very curious document, putting heavy emphasis on his wish that his mother Elizabeth should have her £20 p.a. regularly. Samuel left all his houses, farms and property, and the residue (that would include money) to his wife Mary, who must have received the income from his rented properties, but he put such inordinate emphasis on the necessity to send money to his mother that we must wonder whether Mary disliked her mother-in-law! As an executrix, Mary had a legal obligation to give her mother-in-law her £20, but Samuel obviously didn't trust her, so added threats. Did Mary see the Will before Samuel died? If she did, she must have been furious about the implication that she would be dishonest.

Samuel was one of the active Governors of the Bridewell Royal Hospital who had to interview and appoint two new "Arts Masters" in place of two who had died. As the skills of the "Arts Masters" included that of glover, wire drawer, orrice weaver[17] and other trades, it seems an odd choice to appoint a scale-maker to assess their suitability to train the apprentices. He also went to Lincolnshire to help to assess an estate and farm land that had been left in a Will for the benefit of the Insane in Beth'lem Hospital.[18]

In 1768, *Baldwin's Directory* had Samuel Read, scalemaker at 20 St Martin's Le Grand. Was this an error on their part, or did Samuel move for a short time? The following year, and subsequently, his address was always 59 St Martin's Le Grand.

Although Samuel was not reported as being an active Alderman of the City of London, he did once put his name to a demand for Sir Henry Bankes to be polled in 1770, and the agent of Lord Russell told his master that Samuel Read had voted for another candidate, and not for Lord Russell. Voting was a public event in those days!

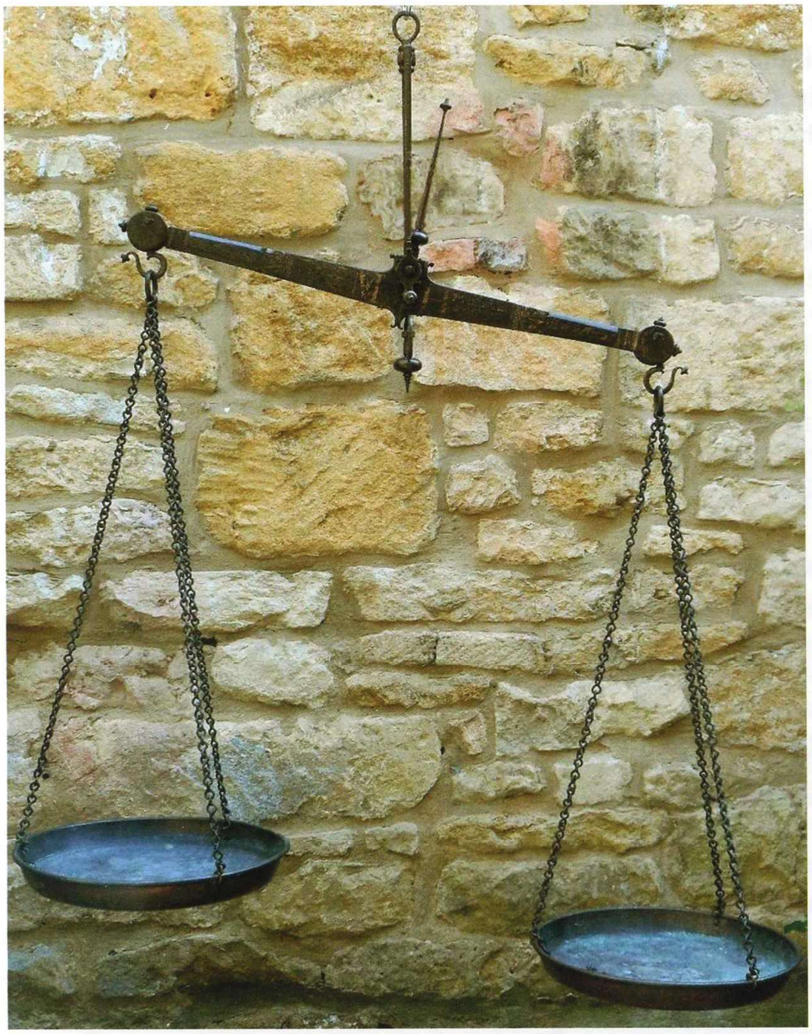


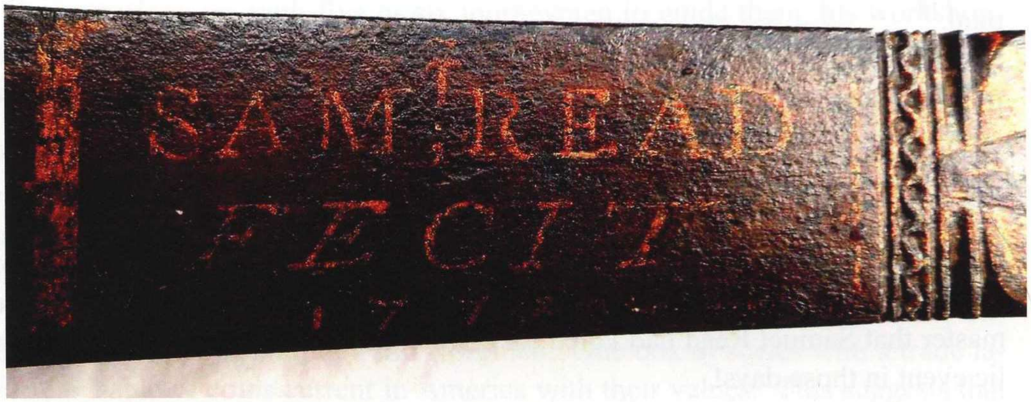
Figure 11. ⮝⮝ This 24 inch beam was made for an Official of "MH". This place has not been identified, but possibly was for the "Manor of Hxxx" or for "Mxxx Hundred". It is a handsome beam but not nearly as eye-catching as the 1773 one found by Andrew Crawforth.

Biographical details give us some idea of his skills and character, but members of ISASC value him mostly for the scales he made. He made coin scales in considerable numbers, (of which at least 13 have survived), of the full range of qualities, from square-section beams in the cheapest Made-up-boxes [MUBs] to fine chamfered beams with box-ends in shagreen cases.[19] Many diamond scales have survived of conventional design, and also one bank scale.

Our 36 in-long trade beam was made in Samuel's workshop in 1773. The quality was high, so if it was sold, it was probably bought by a customer who wished to present himself as prosperous and reliable. Probably it was made by some of his workmen, rather than by Samuel himself. By then, he had been the Master of a large workshop for 38 years, so probably oversaw the work, rather than being hands-on.

The Royal Society, in 1776, required a large precision beam for their experiments into iron, and borrowed Samuel's beam that took 55 lbs in each pan, and tipped when loaded with a flake of brass weighing just one pennyweight. Why did Samuel need a beam of such accuracy? Did he use it to adjust large Standard weights?

Figure 12. ⮞⮞ On one side of the beam was painted "SAM^{L} READ FECIT". Fecit meant "Made it", but he was getting old, so maybe it was made by one of his employees, or by Charles DeGrave, his new partner.



Another beam of high quality, 24 ins long, appeared on ebay this year (and triggered our desire to write this article). The precision of the iron-work, the fine detail, and the good proportions made us wonder why Samuel Read covered it with black paint and twirls of gold! But that painting told us about the transition between the ownership by Samuel Read and that of Charles DeGrave. For just a short time they were in partnership. Samuel was coming up to his 70th birthday. He must have known that if the business was to continue, he needed to make arrangements with a younger man, and Charles was just 33 years old, trained by himself, and obviously ready to take on a busy workshop.

Samuel died in 1778, although the name of the partnership continued to appear in Trade Directories for another 4 years; (one author suggested that it was Mary Read who went into partnership with Charles DeGrave, but she did not pay taxes on the property at 59 St Martins after 1779, so she probably dissociated herself from the scale trade.) Charles DeGrave paid the Land Tax on both properties in 1779 and subsequently. Possibly Charles relied on the reputation that Samuel Read had built up, and was quite happy to leave the Directories to include the name Read & DeGrave.

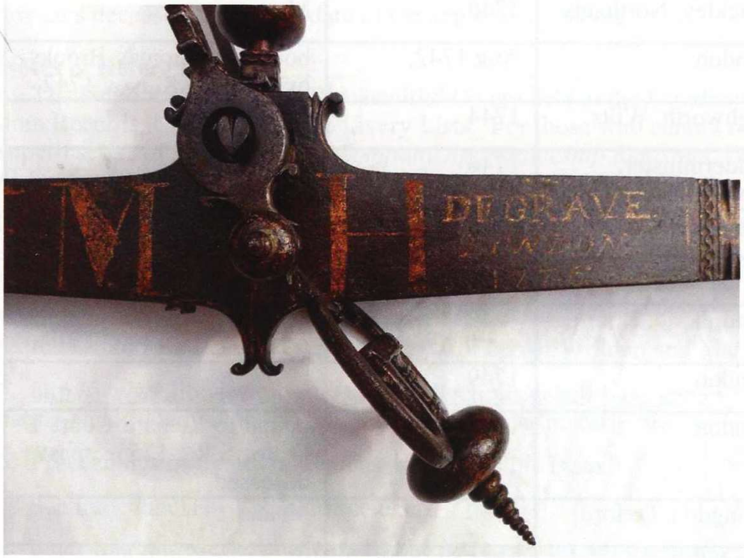


Figure 13. ⋀⋀ The pendant was the same design as that on his earlier 1773 scales, but he did not use the sight-hole shears on this scale, so much less labour was involved.

Samuel certainly left a physical legacy of at least four farms in Hertfordshire, and two shops in the City, but the greater legacy was of trained scale-makers, having had 32 apprentices, fifteen of whom became Masters, who in turn trained more scale-makers. By 1800, 99 scale-makers could attribute their skills to Samuel Read, of whom 29 were Masters. He was not the only scale-maker in London to establish a similar chain of knowledge, but maybe he was one of the most socially responsible and he was certainly the one who made the most accurate scales.

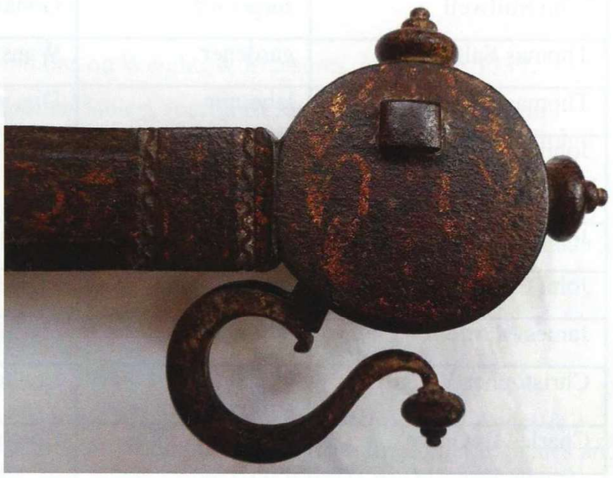


Figure 14. ⋀⋀ Comparing this box-end with that of the 1773 design, it is apparent that they were not doing their very best. The finial is just the knob design, not the multi-blob design.

Samuel Read's Apprentices

Apprentice	Father's Trade	Home Address	Date of Binding	Extra Information
Pinson Killingworth	porter	London	1731	bound to John Lane T/O to S.R. 1735
William Gale	clothworker	Charlton, Wilts	1732	bound to John Neale, T/O to John Lane 1734, T/O to S.R. 1735. Master
Joseph Read	clothier	Kidderminster, Worc	1736	Master
John Sibley	yeoman	London	1736	Possibly a Master
Gibbs Owen	innholder	Brackley, Northants	1740	Master
Giles Jenkins	Cit & Goldsmith	London	Aug 1742,	bound to Thomas Brooksby T/O to S.R. Nov 1742.
William Brind	innholder Ŧ	Highworth, Wilts	1744	Master
Josiah Read	clothier	Kidderminster, Worc	1746	
William Bray	plasterer	London	1748	
James Robinson	labourer	London	1749	Master
Henry Peers	? Ŧ	London	1749	Probably Master working with S.R
Richard Clark	labourer Ŧ	London	1749	
Mathew Bates	blacksmith Ŧ	London	1750	bound to Richard Court T/O to S.R/ 1755, master deceased
Robert Cattell	gardener	Abingdon, Oxford	1750	Master
Charles Trafford	Cit & Butcher	London	1751	
John Matthews	scalemaker	London	1752	
James Holt	carpenter	London	1756	bound to William Newton T/O to S.R. 1761. Master
John Stillwell	surgeon Ŧ	Godalming, Surrey	1757	
Thomas Saltwell	gardener	Wanstead, Essex	1758	
Thomas Mash	labourer	Digswell, Hereford	1758	
John Sangster	blacksmith, scalemaker	London	1759	bound to William Newton T/O to S.R. 1761, master deceased. Master
John Gould	labourer Ŧ	Sherborne, Dorset	1759	
John Peter Lawrence	baker	London	1759	Master
James Mardell	labourer	Hatfield, Herts	1759	
Christopher Vaughton	mathematical instrument maker	London	1760	Master
Charles DeGrave	labourer	Colchester	1760	Master
John Holmes	gentleman	Daventry, Northants	1761	
Thomas Bullock	gentleman Ŧ	London	1765	Master
William Geagle Badcock	cook	Oxford	1768	Master
John North	blacksmith	London	1768	
John Rogers	book-keeper	London	1773	
William Steel	porter	London	1774	

Notes on Table of Apprentices Shown above:

Note that the children whose father had a specific trade were more likely to become master scale-makers. Those whose father was a labourer were more likely to work under a master, not in their own name. John Matthews' family lived in the little parish of St Ann & St Agnes, and his father was a scalemaker. Probably his father worked for Samuel Read, so Samuel would have a good idea of the character of John, and been happy to take him as an apprentice. How did Samuel assess the competence of the child if he lived way outside London? And how did the father of the child decide who to apprentice him to? We have much more to research.

Gentleman meant living on his own money, no longer earning money,
T/O meant turned over from one master to another to complete apprenticeship.
All London addresses include Greater London, technically in Middlesex.
ꝉ means deceased before the date of the apprentice binding

Notes & References

1. The Guild Records of the Blacksmiths' Co are held at the Guildhall, London. These include Apprentice Records, Freedom Records, Court Minutes & Livery Lists. For those who cannot reach London, we thoroughly recommend Cliff Webb's superb series of *London Livery Company Apprenticeship Registers*. We have worn out our first copy of *Vol 41 Blacksmiths' Company 1605-1800*.

2. See Land Tax Records for Aldersgate and St Ann & St Agnes Precinct, 1736-1780.

3. See a2a documents on-line.

4. Supplied courtesy of Susan A. Riggs, Frances Lightfoot Robb Special Collections Librarian, Special Collections Research Center, Earl Gregg Swem Library College of William and Mary, P. O. Box 8794, Williamsburg, VA 23187-8794.

5. http://www2.lib.virginia.edu/small/collections/cabell/biographies/william.html. The Cabell family included some fascinating and influential people who helped to create the early States.

6. Proceedings of the Royal Society in 1742. [Phil Trans.]

7. See trade labels by Samuel Freeman I.

8. www.londonlives.org. Minute Books of The Court of Governors, Bridewell Royal Hospital, 1750-1780

9. £10 is the equivalent of giving a man about £18,000 nowadays.

10. PRO, Wills, held in Chester.

11. a2a. Several records

12. This is where Michael Crawforth's ashes are scattered.

13. See Proceedings & Reports of a Committee of the House of Commons on Weights & Measures, in 1758 & 1759.

14. Read's apprentices included these future Masters : William Gale, John Sibley, Joseph Read, Gibbs Owen, William Brind, James Robinson, Henry Peers, Robert Cattell, John Peter Lawrence, Christopher Vaughton, Charles DeGrave, John Sangster, James Holt, Thomas Bullock & William Geagle Badcock.

15. Subscribers included Edward Scarlett optician, Edward Nairne optician, Benjamin Martin, optician [& scale-maker], G Hyrons, mathematical instrument maker, Heath & Wing, instrument makers, & Thomas Hatton silversmith [& scale-maker].

16. See Google Books for Anno Regni Georgii III, Regis Magnae Britanniae, Franciae & Hiberniae, 1762

17. Orrice weaver, one who wove / embroidered orrice, which was a type of golden lace popular in the 18th century.

18. Beth'lem Hospital [Bedlam] was run by the same Governors as the Bridewell Royal Hospital.

19. Surviving coin scales include at least three shagreen cases, (two from the Angel & Scales, & one from The Angel & King's Arms) four Made-Up-Boxes (two from each address) and six Cut-from-Solid boxes (one from the Angel & Scales and three from the Angel & King's Arms). No other addresses are known. The maker of the coin weights has not been identified.

Acknowledgements

Thanks to Steve Beare, and to <design_jss6797lcz@members.ebay.co.uk> for drawing the S Read bill to our attention.
Thanks to Susan A. Riggs, Frances Lightfoot Robb Special Collections Librarian, Special Collections Research Center, Earl Gregg Swem Library College of William and Mary, P. O. Box 8794, Williamsburg, VA 23187-8794.,
Thanks also to Norman & Christine Biggs for their help with information & photographs, and to The Museum of Colonial Williamsburg.
Without the help and enthusiasm of Andrew Crawforth, this article would never have been completed.

1857 Maranville Coin Tester, 1

BY MALCOLM MATHIAS

1857 Maranville Coin Tester – Background
This type of scale is also known as a Counterfeit Coin Detector (CCD)

Harvey Maranville invented the first of his three coin testers in 1857 while he was living in Clinton, Ohio. His second coin tester was also invented in Clinton, Ohio, in 1860 before he moved to Akron, Ohio, in 1861, where he invented his third coin tester in 1878.

Newman and Mallis describe these three coin testers in their book ***U.S. Coin Scales and Mechanical Counterfeit Coin Detectors*** (1999 - Lib of Congress Cat No. 91-091329, pages IV-4-1 to IV-4-4). Newman and Mallis dedicated their book to the International Society of Antique Scale Collectors and Michael A. Crawforth. Newman and Mallis were members of: The International Society of Antique Scale Collectors (ISASC); American Numismatic Society; and American Numismatic Association.

The International Society of Antique Scale Collectors (ISASC) assisted further research into the three Maranville coin testers via an email sent to all ISASC members seeking photos of examples in personal collections. The author is grateful for the ISASC member responses.

The Eric P. Newman Numismatic Education Society (EPNNES) based at Washington University in St Louis awarded an inaugural Newman Numismatic Grant to the author to research the three Maranville coin testers. The author is grateful for the opportunity to tour the U.S.A., inspecting examples of all three versions of Maranville's coin testers.

The author of these articles is very aware of the previous ground-breaking work of Newman and Mallis, and grateful for the opportunity to learn and document more of this interesting stage in American numismatic history which was intertwined with broader American history.

The author considered the different audience reading about Maranville, and how to best organise the information for the different purposes that scale collectors, numismatists and/or historians might wish to access. For this reason, the Maranville story is told in several parts.

Maranville's first coin tester in 1857 was a pocket-sized brass device with a sliding brass beam in a small box. It was designed to check both U.S. and foreign coins – silver and gold.

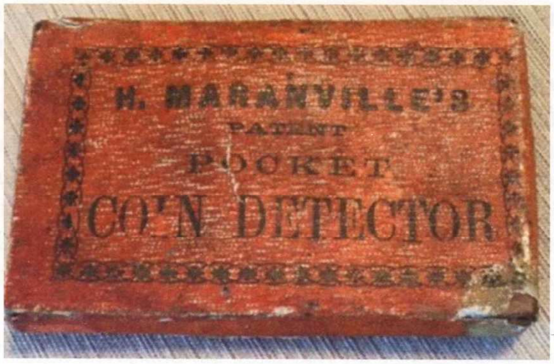
Newman and Mallis described the 1857 coin tester as:
Brass, sheet metal pan and fixed arm with a sliding arm that slides into the fixed arm. The sliding arm is marked into four columns with incremental markings to weigh foreign gold and silver coins on two columns and United States gold and silver coins on the remaining two columns. The pan on the fixed arm has graduated notches on the raised edges to measure the thickness of the coin. Partial circles on the face of the pan indicate the diameter of the coin in question. The device sits on a small metal base that forms the bearing points of the knife edges on the fixed arm.

This detector was stamped on the reverse side of the long arm Made By C. E. STAPLES, Worcester, Mass. and H. Maranville's PATENT JAN 12. 1857 Clinton O. The device in its closed position measures 3¾ inches (83 mm) in length and 4¾ inches (120 mm) when fully extended to weigh a $20 U.S. gold coin. The beam is 1 inch (25 mm) wide and the pan which holds the coins is circular, with a diameter of 1⅞ inches (48 mm).

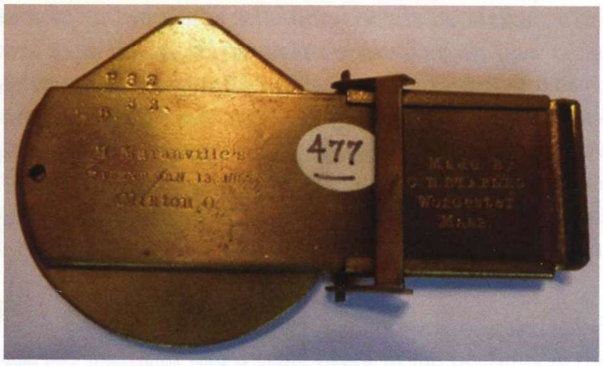
Newman and Mallis went on: *There is, currently no known box for this device.*
Source: Newman, Eric P. and Mallis, A. George, 1999, ***U.S. Coin Scales and Mechanical Counterfeit Coin Detectors***, CHP. IV: SEC. 4: P 1 [IV-4-1]

The tour of USA sponsored by EPNNÉS uncovered two different versions of the original box for the 1857 Maranville coin tester held by collectors – one blue; one brown; both with the same printed inscription on the lid of the box; both previously unknown to Newman and Mallis.

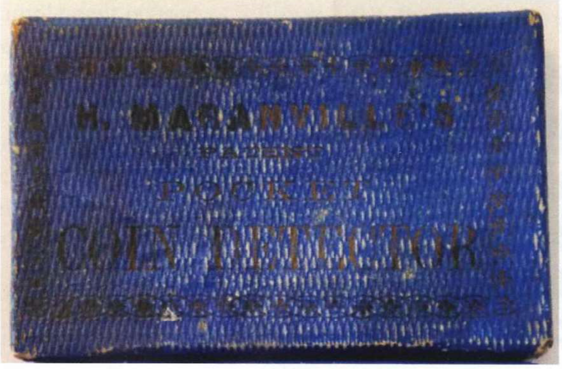
H. MARANVILLE'S
PATENT
POCKET
COIN DETECTOR



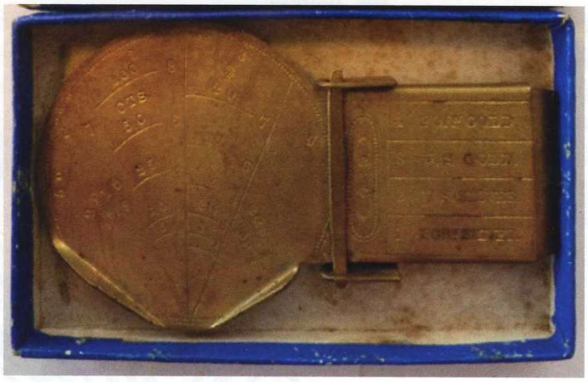
▲▲ Original brown box for 1857 Coin Detector.



▲▲ B32 — ISASC member Collection

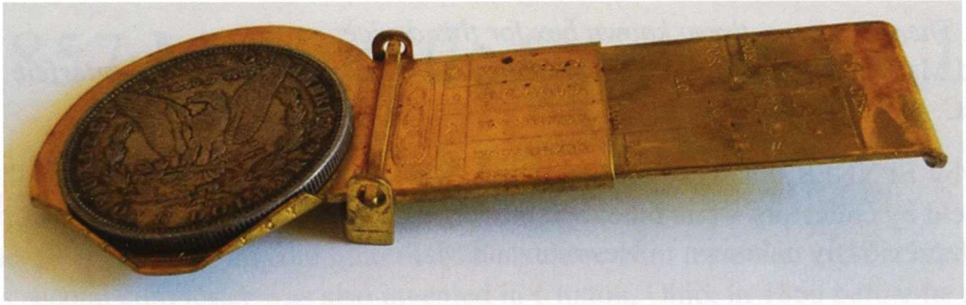


▲▲ Original blue box for 1857 Coin Detector.



▲▲ 40 - Dan Hamelberg Collection.

Original boxes in both brown and blue – the print style appears to be identical on both. Perhaps different coloured boxes were used with different production batches of 100.



≺≺ 1857 Maranville – Actual size (115 mm long when beam extended to $1 position). No 7 - Bill James Collection.

A genuine coin must satisfy three tests – weight, diameter and thickness.
The 1857 provides tests for these three dimensions:

1. The expected diameter is marked for each coin value (e.g.: US $1) on the pan area.
2. Thickness is tested against marks on the inclined front ledges.
3. The beam is extended to the mark for the coin being weighed, and it should balance.

Harvey Maranville patented his new coin tester on January 13, 1857. Maranville described the use of the coin tester in his Patent application:

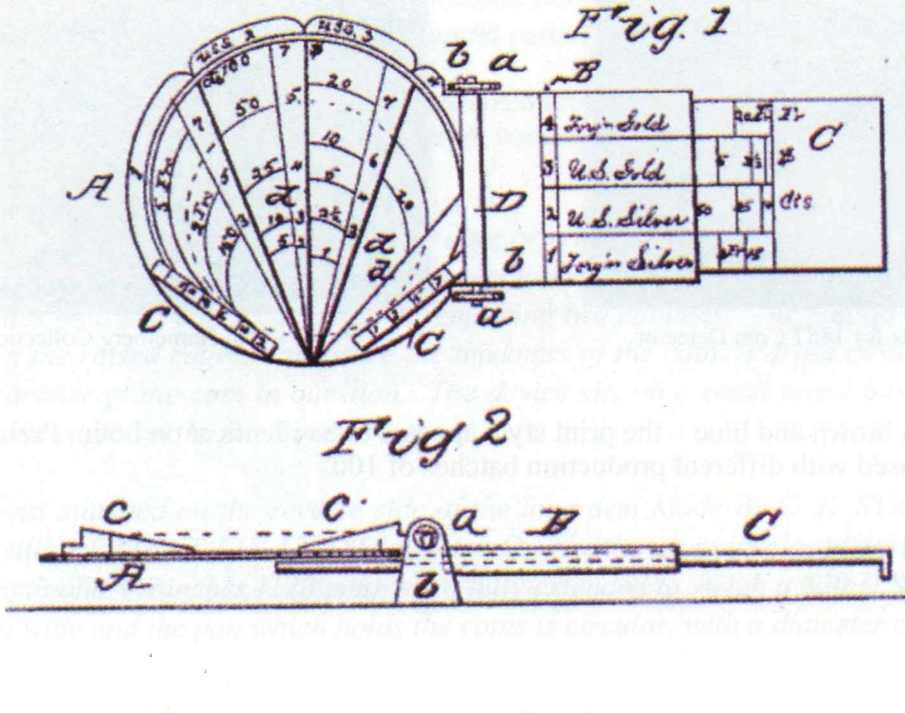
> *The implement is used as follows: Take, for instance, a silver dime, and place it upon the disk, A, the edge of the dime being placed against the ledges (c) (c). Then adjust the slide C, so that the line marked 10 in the part marked "cts.," on the slide will be even with the outer edge of the plate B. If the coin be genuine its edge will be precisely over the line marked 10 in the disk, and the disk and slide will be evenly balanced. The thickness of the coin is indicated by figures on the ledges (c), the ledges being of taper or inclined form.*

The full text of the Patent is reproduced below:

H. MARANVILLE.

Coin Tester.

No. 16,390. **Patented Jan. 13, 1857.**



UNITED STATES PATENT OFFICE.
H. MARANVILLE, OF CLINTON, OHIO.
BALANCE FOR DETECTING COIINTERFEIT COINS.
Specification of Letters Patent No. 16,390. Patented Jan: 13, 1857.

To all whom it may concern:

Be it known that I, H. MARANVILLE, of Clinton, in the county of Summit and State of Ohio, have invented a new and Improved Implement or Device for Detecting Counterfeit Coins; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which –

Figure l is a face view of my improvement. Fig. 2 is a side view of ditto.

Similar letters of reference indicate corresponding parts in the two figures.

My invention consists in the employment or use of a graduated disk and slide, connected together and hung upon centers, so as to form a scale beam. The disk has guides attached to its face and the several parts are so arranged that the coin may be weighed and also measured both as regards thickness and diameter, and the implement may be made quite portable so that it may be carried in the pocket with as little inconvenience as an ordinary pocketknife or comb.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a disk or circular plate, to one side of which a projecting plate B is attached. The sides or edges of the plate B are bent downward and underneath the other portion to form guides to receive a sliding plate C which is allowed to work freely in said guides underneath the disk A and plate B. The disk A and plate B may be formed of sheet brass or other metal and both cut out of one piece. The disk A need not much exceed in diameter a silver dollar. The slide C is also formed of a piece of sheet metal. On the plate B at its junction with the disk A, a bar D is secured transversely, and knife edged journals *(a)* are formed one on each side of said bar. These journals *(a)* have their bearings in ears or lugs *(b)* turned up at the end of a bar underneath the plate B. On the face of the disk A there are secured two ledges *(c) (c).* These ledges are placed in oblique positions near the edge of the disk and form guides against which the edge of the coin to be tested is placed. The disk A has its face graduated as shown in Fig. 1- curved lines being made indicating the diameter of gold and silver coins of different denominations. The different scales are divided by lines *(d).*

The slide C is divided longitudinally into four parts, each part being graduated, one part for silver and another for gold, a part for foreign silver and the other part for foreign gold. The disk and slide are balanced like a scale beam in the bearings in the lugs *(b)* and the weight of the coin on the disk A is counterbalanced by adjusting the slide C.

The implement is used as follows: Take, for instance, a silver dime, and place it upon the disk, A, the edge of the dime being placed against the ledges *(c) (c).* Then adjust the slide C, so that the line marked 10 in the part marked "cts.," on the slide will be even with the outer edge of the plate B. If the coin be genuine its edge will be precisely over the line marked 10 in the disk, and the disk and slide will be evenly balanced. The thickness of the coin is indicated by figures on the ledges *(c),* the ledges being of taper or inclined form. It will be seen that by the above implement the coins are weighed and measured, and therefore counterfeit coin may be readily detected. If a spurious coin is of the same weight as a genuine one it must be larger, because any known metal heavier than gold is more valuable and consequently would not be used in combination with other metals for counterfeiting. If a spurious coin is equal in size to a genuine one it will, of course, be of less weight.

The implement is exceedingly simple in construction and may be made quite portable, not exceeding 3 or 4 inches in length.

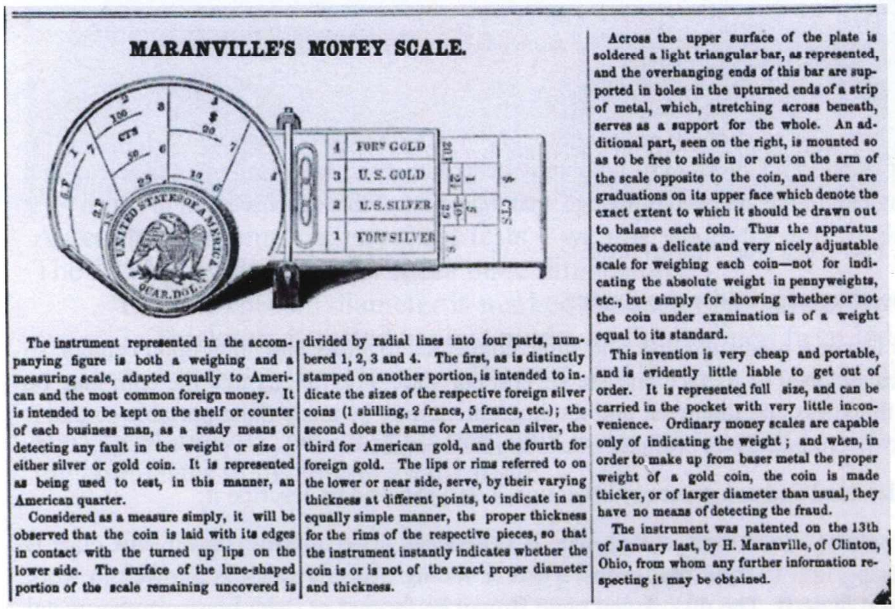
Having thus described my invention, what I claim as new and desire to secure by Letters Patent is –

The graduated disk A and slide C connected as shown and hung in the ears or lugs *(b),* the disk having ledges or guides *(c) (c)* attached to its face and the whole arranged as herein shown and described, for the purpose set forth.

H. MARANVILLE.

Witnesses:
J. F. GILBERT,
I. I. WRIGHT.

Scientific American heralded the arrival of Maranville's Money Scale on the front page of their August 22, 1857 edition (Volume XII, Number 50).



MARANVILLE'S MONEY SCALE.

The instrument represented in the accompanying figure is both a weighing and a measuring scale, adapted equally to American and the most common foreign money. It is intended to be kept on the shelf or counter of each business man, as a ready means or detecting any fault in the weight or size or either silver or gold coin. It is represented as being used to test, in this manner, an American quarter.

Considered as a measure simply, it will be observed that the coin is laid with its edges in contact with the turned up lips on the lower side. The surface of the lune-shaped portion of the scale remaining uncovered is divided by radial lines into four parts, numbered 1, 2, 3 and 4. The first, as is distinctly stamped on another portion, is intended to indicate the sizes of the respective foreign silver coins (1 shilling, 2 francs, 5 francs, etc.); the second does the same for American silver, the third for American gold, and the fourth for foreign gold. The lips or rims referred to on the lower or near side, serve, by their varying thickness at different points, to indicate in an equally simple manner, the proper thickness for the rims of the respective pieces, so that the instrument instantly indicates whether the coin is or is not of the exact proper diameter and thickness.

Across the upper surface of the plate is soldered a light triangular bar, as represented, and the overhanging ends of this bar are supported in holes in the upturned ends of a strip of metal, which, stretching across beneath, serves as a support for the whole. An additional part, seen on the right, is mounted so as to be free to slide in or out on the arm of the scale opposite to the coin, and there are graduations on its upper face which denote the exact extent to which it should be drawn out to balance each coin. Thus the apparatus becomes a delicate and very nicely adjustable scale for weighing each coin—not for indicating the absolute weight in pennyweights, etc., but simply for showing whether or not the coin under examination is of a weight equal to its standard.

This invention is very cheap and portable, and is evidently little liable to get out of order. It is represented full size, and can be carried in the pocket with very little inconvenience. Ordinary money scales are capable only of indicating the weight; and when, in order to make up from baser metal the proper weight of a gold coin, the coin is made thicker, or of larger diameter than usual, they have no means of detecting the fraud.

The instrument was patented on the 13th of January last, by H. Maranville, of Clinton, Ohio, from whom any further information respecting it may be obtained.

The full text of the *Scientific American* article is reproduced below.

Maranville's Money Scale

The instrument represented in the accompanying figure is both a weighing and a measuring scale, adapted equally to American and the most common foreign money. It is intended to be kept on the shelf or counter of each business man, as a ready means of detecting any fault in the weight or size of either silver or gold coin. It is represented as being used to test, in this manner, an American quarter.

Considered as a measure simply, it will be observed that the coin is laid with its edges in contact with the turned up lips on the lower side. The surface of the lune-shaped portion of the scale remaining uncovered is divided by radial lines into four parts, numbered 1, 2, 3 and 4. The first, as is distinctly stamped on another portion, is intended to indicate the sizes of respective foreign silver coins (1 shilling, 2 francs, 5 francs, etc.); the second does the same for American silver, the third for American gold, and the fourth for foreign gold. The lips or rims referred to on the lower or near side, serve, by their varying thickness at different points, to indicate in an equally simple manner, the proper thickness for the rims of the respective pieces, so that the instrument instantly indicates whether the coin is or is not of the exact proper diameter and thickness.

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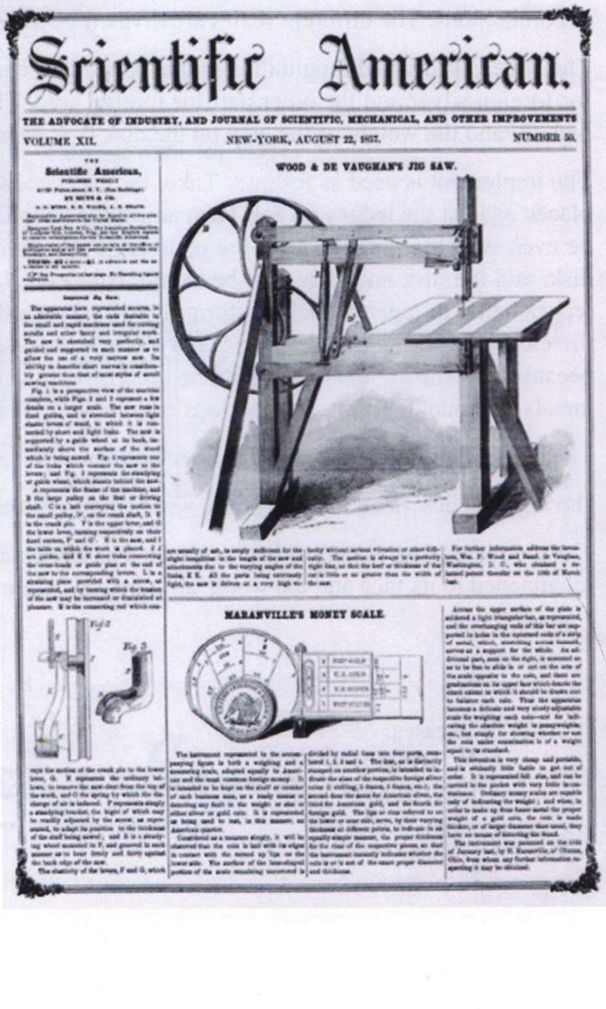


Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII. NEW-YORK, AUGUST 22, 1857. NUMBER 50.

WOOD & DE VAUGHAN'S JIG SAW.

MARANVILLE'S MONEY SCALE.

Who was Harvey Maranville?

Harvey Maranville was a prominent citizen in both Clinton, Ohio, from 1833 to 1861, and later in Akron, Ohio, from 1861 to 1889. The length and detail of his obituary in the *Summit County Beacon* newspaper commemorated the significant parts he played in this early period of Ohio History:

55 YEARS A SUMMITONIAN - DEATH OF HARVEY MARANVILLE

After many years' intense suffering from bladder complications, Akron's well-known citizen, Harvey Maranville, Esq., peacefully passed away at 3:15P.M., Saturday, January 12, 1889. The deceased was born at Poultney, Vermont, March 19, 1812, his age at death being 76 years, 9 months and 23 days.

Settling in the village of Clinton, in what is now Summit County, in the Fall of 1833, he devoted his Winters to teaching and his Summers to the carpenter's trade, building many of the early bridges across the numerous streams in that vicinity; also, having studied civil engineering, devoting considerable time to surveying in that vicinity.

For many years, Mr. Maranville held the office of Justice of the Peace of Franklin township, acquiring an enviable reputation for the soundness of his judicial rulings and judgements.

Removing to Akron in 1861, in 1863 he was appointed, under the United States Internal Revenue system, Inspector and Gauger of distilled and malt liquors and illuminating oils, for Summit County, being one of the most efficient and conscientious officers in the service, and holding the position until this sub-district was abolished, about seven years ago.

November 1, 1837, the deceased was married to Miss Nancy Harbaugh, of Lawrence township, Stark County, Ohio, who died December 18, 1886, at the age of 70 years, 10 months and 21 days.

They were the parents of 10 children, six of whom survive:

- *Frank Maranville, of Clinton, Ohio;*
- *Mrs Emily Updike and Esther Maranville, of Lake City, Mich.*
- *Mrs Bloomy McCormick, of Millersburg, Ohio;*
- *Harvey Maranville, Jr., and*
- *Mrs Amelia Latimer, of Akron,*

with thirteen grandchildren and one great-grand child – Clarence Harvey, the three months' old son of Harvey Franklin Maranville, of Akron.

The grandfather of the deceased was a soldier in the Revolutionary war; his father a soldier in the war of 1812; himself enlisting for the Mexican war, which closed before he was called into service, and furnishing two sons for the war of the Rebellion, one of whom – Jay Maranville, Co. H, 104th O.V.I. – died in the service, at Strawberry Plains, Tenn., January 12, 1864.

Funeral at the family residence, 105 Wood Street, Tuesday, January 15, at 10 o'clock A.M.

Source: Obituary, *The Summit County Beacon*, Akron, Ohio, Mon Jan 14, 1889, p4

Harvey Maranville lived in what is now known as Rhoads-Harter House at 7866 Main Street, Clinton, before moving to Akron, Ohio, in 1861. The Rhoads-Harter House is now owned and operated by the Clinton Historical Society.

RHOADS-HARTER HOUSE

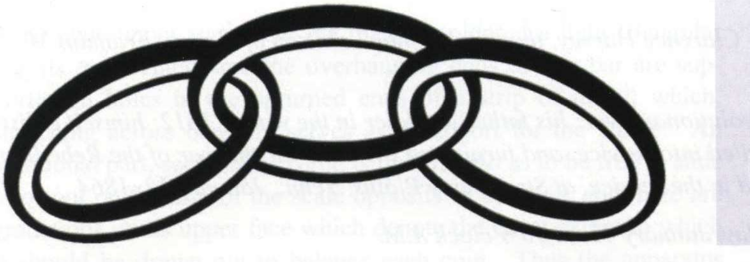
Built in 1847, this unique Gothic Revival home was considered one of the finest of its time. It is listed as a Summit County Underground Railroad site on the well-travelled "Chestnut Ridge Track," which crossed the township, assisting runaway slaves on their way to Canada and to freedom.

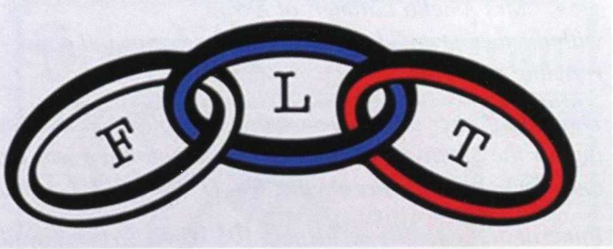
In 1874, Pearson Rhoads, a Civil War veteran of Andersonville prison, and his wife Sara Jane Foltz purchased the home. They raised eight children in a loving, religious environment. The home now serves as a museum depicting family life in the canal villages.

Source: www.ohioanderiecanalway.com

Prior to 1860, a well-travelled line of underground railroad crossed the Clinton township, being confined to what is known as the Chestnut Ridge, with occasional side-tracks. Prominent officials on this road were Alexander Russell, James Hile, Harvey Maranville, Washington Heffleman and George Wirt. These men lost no opportunity of assisting runaway slaves to Canada. On one occasion, Messrs. Russell and Maranville were notified that five slaves – two women and three men – were west of Clinton, in the heavy woods on Chestnut Ridge waiting for food and clothing. They were accordingly supplied and directed on their course to the next station. On another occasion, a settler in the township who had come from Kentucky, seeing a negro travelling northward through the woods with a gun on his shoulder, ran after him and took away the gun, saying as he did so, “It’s against the law for nig’s to carry a gun.” Two or three of the men mentioned above informed this settler to return the gun to the negro immediately, or trouble would ensue, whereupon the fellow reluctantly did so. When questioned as to where the gun was obtained, the negro replied that “Massa Wales”, of Massillon, had given it to him to kill partridges and other game, upon which to subsist while travelling North. Wales was probably train-despatcher on this road. He was a good one, and no collision has since been computed to his fault. (Perrin, William H. 1881, ***History of Summit County***, Chicago, Basken & Battey, p.634).

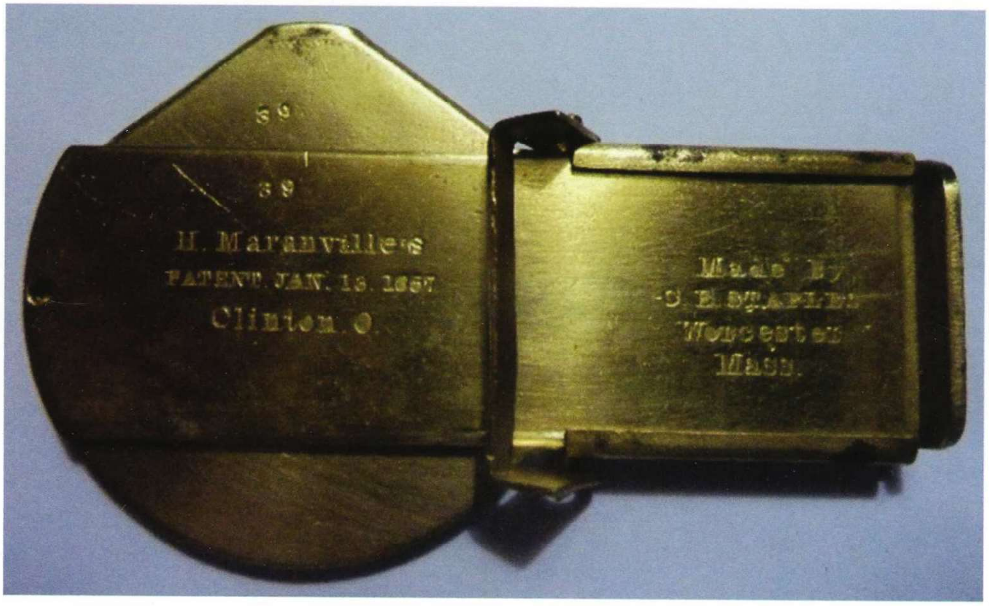
The Independent Order of Odd Fellows (IOOF) is a non-political and non-sectarian international fraternal order of Odd Fellowship. The order is also known as the Triple Link Fraternity, referring to the order's "Triple Links" symbol, alluding to its motto "Friendship, Love and Truth". The three-ring chain included as part of the design of the 1857 Maranville Coin Tester appears closely similar to one of the symbols used by the Independent Order of Odd Fellows founded in 1819 by Thomas Wildey in Baltimore, Maryland, United States.





Harvey Maranville was probably a member of the Independent Order of Odd Fellows (IOOF). Maranville’s involvement in the underground railway is consistent with the IOOF motto “Friendship, Love and Truth.” The “Triple Links” symbol is part of the design near the balance point of Maranville’s 1857 Coin Tester. (See Maranville’s Money Scale, EQM page 4688.)

All “known” examples of the 1857 Maranville Coin Tester are identified by numbers on both the back of the pan, and again on the back of the sliding beam. The sliding brass beam also carries Maranville’s name, the Patent date and the maker’s details – C.E.Staples of Worcester, Massachusetts.



No. 39 - Larry Press Collection.

The numbers are probably identifiers marked during manufacture to identify "matching parts" for the pan and the beam. The matching was necessary to ensure that the coins balanced at the points marked on the sliding beam. If the coin tester did not balance after manufacture, there was probably some adjustment in the weight of the beam by filing the rounded end of the beam to suit. Once the required balance was achieved, the two parts were probably numbered with matching numbers to ensure they stayed together for later sale.

Harvey Maranville (1812-1889)

Harvey Maranville had trained as an engineer and arrived in Clinton, Ohio, in the fall of 1833, just after the completion of the Ohio-Erie Canal on October 15, 1832. He devoted his winters to teaching and his summers to the carpenter's trade, building many of the early bridges across the numerous streams in that vicinity; also, having studied civil engineering, devoting considerable time to surveying in that vicinity.

For many years, Maranville held the office of Justice of the Peace of Franklin township, acquiring an enviable reputation for the soundness of his judicial rulings and judgements.

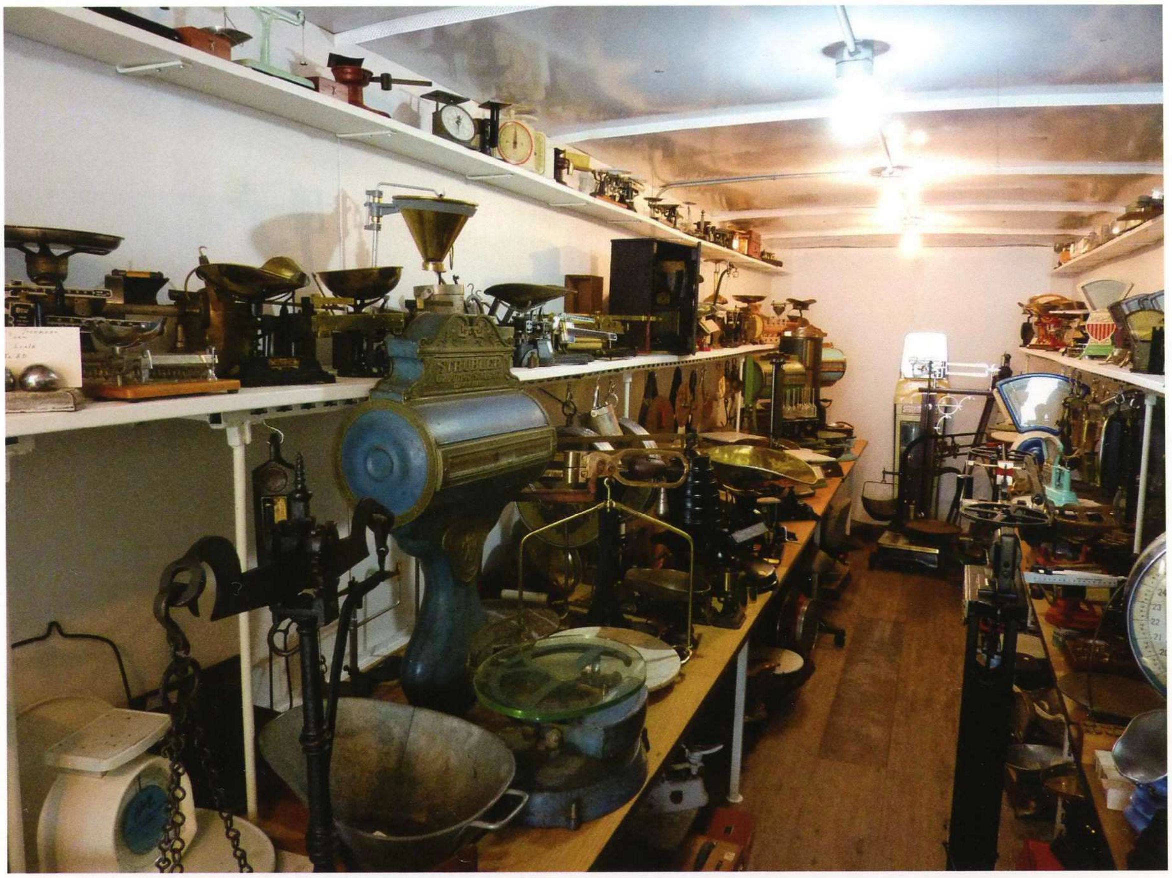
Removing to Akron in 1861, he was appointed in 1863, under the United States Internal Revenue system, Inspector and Gauger of distilled and malt liquors and illuminating oils, for Summit County, holding the position for approximately 19 years.

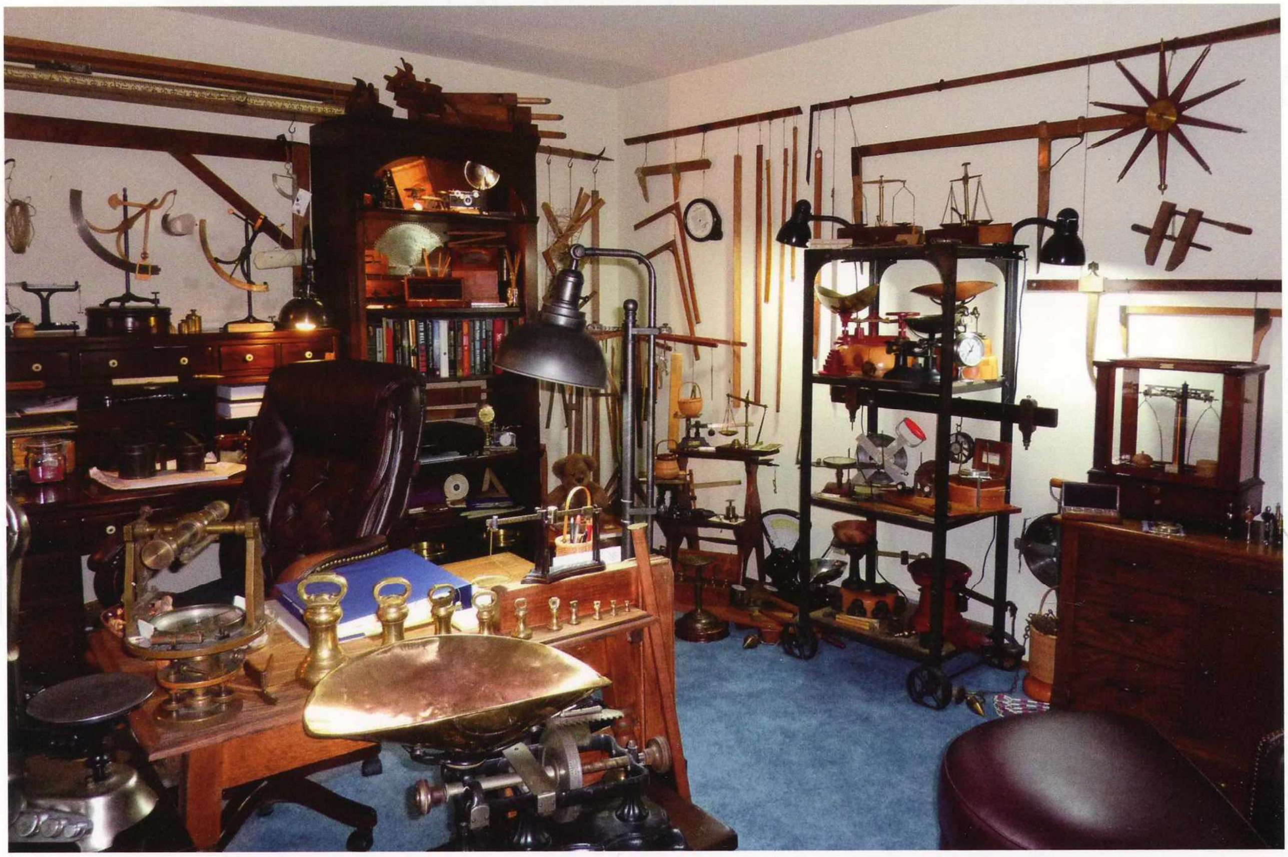
Somewhere amid being a carpenter building bridges, a part time teacher, and carrying out his duties as Justice of the Peace of Franklin township, Harvey Maranville found the time to invent his 1857 Coin Tester and then arranged for Charles E. Staples to make it in Worcester, Massachusetts, and ship it to Clinton, Ohio, via the Ohio-Erie Canal system in batches of 100.

Harvey Maranville clearly enjoyed an interesting and fulfilling life, and we are left with the ingenious coin testers he invented.

Editor's Note:
This article will be continued in several future issues of EQM.

How Members Display Their Collections





ISASC®

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2020 ISSUE NO. 2 PAGES 4693 - 4720

Cover Picture

Merchant scale made by Duryee & Forsyth in Rochester, New York. This is a 5 pound on the beam platform scale with proportional weights to increase capacity to 20 pounds. The scale apparatus sits on a raised pedestal. In operation, the merchant establishes the correct weight balance, and would then rotate the top platform part of the scale to face the customer to verify the weight of the selected merchandise. This is the only example of a rotating platform scale this author has seen, as well as many ISASC members that have seen this scale.

Gregg and Amy Motter Collection

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Old Advert 4710

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ISASC
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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Chauncey Duryee and Orrin Forsyth - Scale Makers & Partners, Part 1

BY GREGG MOTTER

Weighing Machines Measured in Tons of Iron

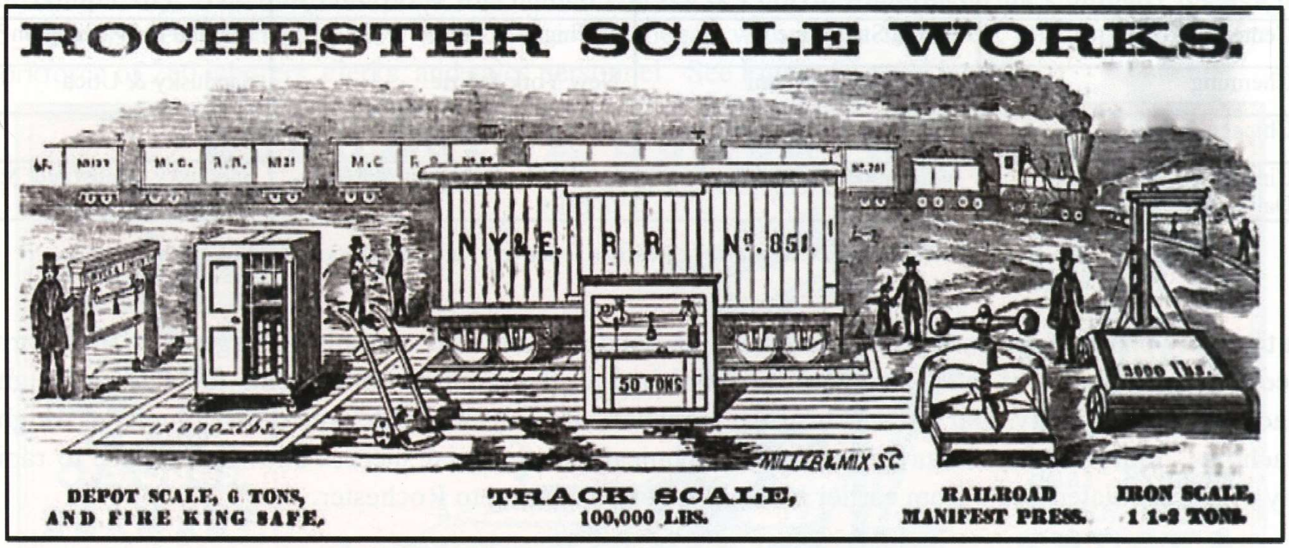

ROCHESTER SCALE WORKS.
N.Y.&E. R.R. No. 851.
50 TONS
12000 lbs.
3000 lbs.
MILLER & MIX SC
DEPOT SCALE, 6 TONS, AND FIRE KING SAFE.
TRACK SCALE, 100,000 LBS.
RAILROAD MANIFEST PRESS.
IRON SCALE, 1 1-2 TONS.

Figure 1. ▲▲ Duryee Manufacturer 1850 Trade Card. As can be seen in this interesting Trade Card, Duryee initially focused on Railroad Track Scales, Safes, Presses, Depot Scales, and Baggage and Freight Scales.

The Chauncey Duryee and Orrin Forsyth scale making story took place in Rochester, New York. The city was founded by English immigrants seeking fertile agricultural land. The banks of the Genesee River location were chosen for three waterfalls offering power to turn mills, and a North - South shipping route. By 1838, Rochester was nicknamed "The Flour City," since it was the largest flour producing area in the U.S., and America's first boomtown. This booming economy drove the need for all types of weighing machines both large and small for agriculture, commerce, loaded railroad cars, and freight carrying canal boats.

This initial article is focused on Chauncey Duryee's weighing machine activities, his companies, and partnership with Orrin Forsyth; up to his early death at age 39. The next edition of EQM will pick up the story at the end of the Duryee and Forsyth short partnership that led to the famous Forsyth Scale Works and their innovative and patented counter-top scales.

Chauncey Duryee moved to Rochester and established Duryee Manufacturer in 1841. His goal was to be a maker of improved weighing machinery based on his unique combination of skills in anvil blacksmithing, experience as an Engine Lathe Journeyman, and independent study leading to a mastery of mechanics.

Duryee began his weighing machine business by producing machines for large, to very large, complex applications as can be seen in the above trade card: depot scales, Fire King Safes, railroad track scales, book presses, and roll-around high capacity freight and baggage scales. Interestingly, each of the box cars in Figure 1 bear the railroad symbol utilizing his track scales. Refer to Figure 2 for a full listing of these companies primarily located in the northeastern U.S. Duryee also manufactured railroad locomotive turn-tables that were so well balanced one man could reverse the direction of a 30 ton locomotive, and the associated tender, in 25 seconds!

Railroads Utilizing Duryee Track Scales			
American Express Co.	Cleveland & Columbus	Illinois Coal Co	New York & N. Haven
Buffalo & Rochester	Cleveland & Pittsburg	Louisville & Frankfort	Patterson & Hudson
Buffalo & State Line	Columbus & Xenia	Mad River & Lake Erie	Rochester Syracuse
Cayuga & Susquehanna	Dayton & Western	Michigan Central	Rome & Watertown
Central Ohio	Erie & State Line	Michigan Southern	Rutland & Washington
Chemung	Greenville & Miami	New York & Erie	Sandusky & Utica
Chicago & Galena	Hillsboro & Cincinnati	New York & Harlem	
Cincinnati, Hamilton & Dayton	Indianapolis & Bellefontaine	Rochester, Lockport, & Niagara Falls	Sandusky, Mansfield, & Newark

Figure 2. ▲▲ Over 30 Railroads exclusively, or nearly exclusively, utilized Duryee Track Scales in 1850.

In the early phase of his enterprise, Duryee single-handedly drew his own plans, forged iron, transformed steel bars and blocks of brass into parts, and finished all the required components for a given weighing machine. Additionally, Duryee was his own salesman, and personally delivered his completed weighing machines. Duryee Manufacturer was both a technical and financial success allowing Duryee to rapidly pay off accumulated debts from earlier in his life, before coming to Rochester.

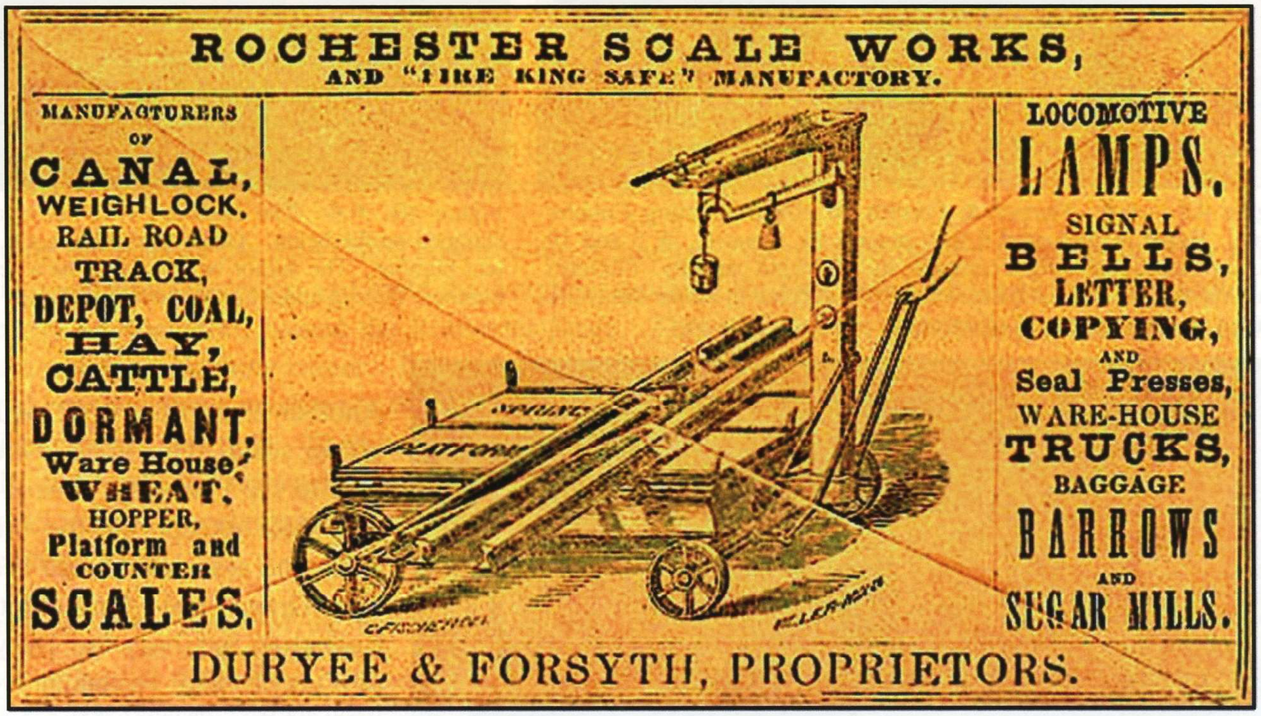
An 1851 *American Railroad Journal* article described Duryee's weighing machines in the following manner:, *"It has been decided by Scientific Gentlemen, that his scales are preferable to all others, from the fact of their being made stronger and more substantial, more material used in the construction of the levers...can be relied upon as Durable, Safe and Accurate, as any scale in the market – the bearing edges are made of the best cast steel, well-tempered, and great care taken in their adjustment..."*

This same article described the state of the weighing machine business as: *"...Duryee...has done much to improve and bring into use weighing machinery, and to bring the price of a good article to a fair standard, and within the reach of all wanting them. Previous to his engaging in the business, a high and exorbitant price was charged for scales, by the New England Manufacturers* (Fairbanks and Howe), *and for a share of patronage, a strong hostility was built up against them by their opponents, and persevered with zeal to crush them!..."*

Numerous misrepresentations were directed at Duryee Manufacturer in attempts to defame his weighing machines. The reality proved that Duryee's weighing machines were more accurate and convenient than his competitor's machines. The more competitors advertised against him, the more they drove customers to his enterprise, and as a result, increased his sales and resulting profitability! In the period 1849 to 1850, all railroad scales on the principle lines operating in the northeastern U.S. had the markings of Duryee, and the city of Rochester on them as seen in Figures 1 and 2 above.

As a result of perseverance, and economy of operation in the early years of business, Duryee gradually hired shop workmen to handle the ever increasing work load. In order to keep the dozens of workmen aligned, Duryee established a co-partnership with a very talented manufacturing man named Mr. Baldwin, and Duryee adopted a one-word motto that drove everything they did; "Excel!"

In 1845, Duryee established a limited partnership with Orrin Forsyth, in the manufacture of scales and safes, where Duryee was the senior partner. (What became of Mr. Baldwin is lost to history. It appears he came into the business, and left, rather quickly.) Orrin Forsyth significantly enhanced Duryee's operation by adding experience in designing and building large load carrying machines called bridges, a ready-made freight handling business to deliver scales of all sizes to his customers, working capital to continue growing the business, and management talent for the ever-increasing workforce and product line complexity. The new enterprise was named Duryee & Forsyth Manufacturing Company located at 15 Water Street, Rochester, New York. The firm began with just a few men, and rapidly grew to a workforce of 280 laborers, clerks, and sales personnel. See Figure 3.



ROCHESTER SCALE WORKS,
AND "FIRE KING SAFE" MANUFACTORY.

MANUFACTURERS
OF
CANAL,
WEIGHLOCK,
RAIL ROAD
TRACK,
DEPOT, COAL,
HAY,
CATTLE,
DORMANT,
Ware House,
WHEAT,
HOPPER,
Platform and
COUNTER
SCALES.

LOCOMOTIVE
LAMPS,
SIGNAL
BELLS,
LETTER,
COPYING,
AND
Seal Presses,
WARE-HOUSE
TRUCKS,
BAGGAGE
BARROWS
AND
SUGAR MILLS.

DURYEE & FORSYTH, PROPRIETORS.

Figure 3. ▲▲ 1840s Trade Card for Duryee & Forsyth illustrating the huge expansion of products beyond Railroad Scales and safes shown in Figure 1. (Used by permission.)

Business Expansion into Counter-Top Scales

Based on Trade Card and patent evidence that has survived, it appears Forsyth was the driving force to expand the business from large weighing machines, such as railroad scales, to smaller scales used in counter-top mercantile applications. Also remember, at this time in history, Rochester was a boom town creating a huge need for all types of scales to enable commerce. These scales are very interesting from a collector's perspective as illustrated in Figures 4 and 5.

1. The brass beams have a unique, almost tear-drop, cross-sectional design. As a result, the beam's graduations are on a surface that angles upward toward the user's eye, making it much easier to accurately read. The Duryee & Forsyth scales are the only place this author has seen this beam design applied. It is so unique, this author believes it must have been patented, but was unable to locate the patent.
2. These scales have a very distinctive, larger radius, arch (as compared to the New England competitors of Fairbanks and Howe) on the far end of the beam supporting the proportional weight hanger.
3. The associated beam head included a 'finger' that protruded and fit into a slot in the cast iron scale base to prevent the beam from wild up and down swings as the scale was loaded and unloaded.
4. The majority of the iron castings comprising the balance of the scale appear to have been purchased from E. & T. Fairbanks in St. Johnsbury, Vermont! They are identical in every aspect.

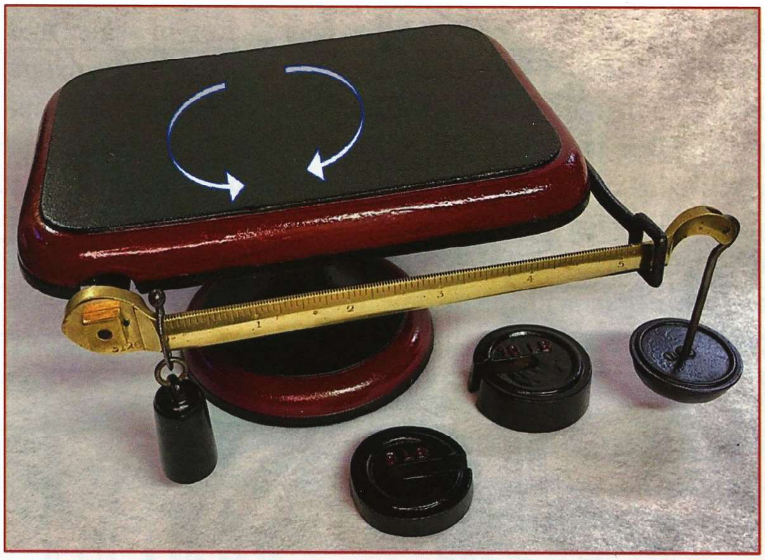


Figure 4A. ⮝⮝ Duryee & Forsyth 20 pound Rotating Counter Scale. Beam is graduated 0 to 5 pounds by 1 ounce. A 5 and 10 pound proportional weight complete the 20 pound capacity. Platform scale on top of pedestal base rotates 360 degrees in either direction. (Gregg and Amy Motter Collection)

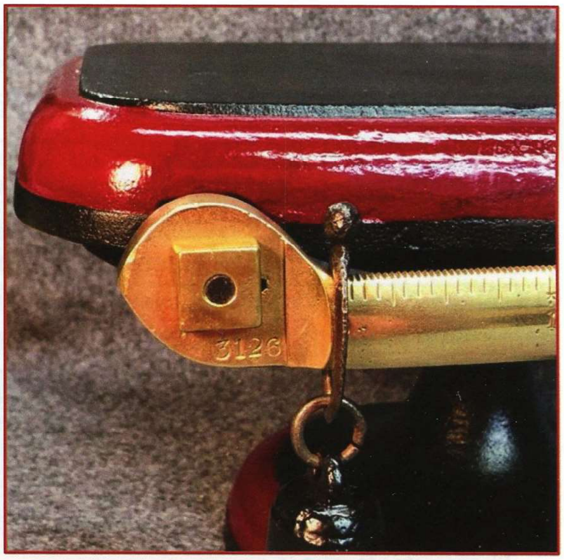


Figure 4B. ⮝⮝ The number '3126' is clearly stamped on the beam. This is definitely not a patent number. The author believes it to be a serial number. (Gregg and Amy Motter Collection)

Another example is a 62 pound grocer scale. This scale is identical to the Fairbanks version of this scale except for the brass beam and associated beam head. The Gregg and Amy Motter Collection has both the Duryee & Forsyth and Fairbanks versions of this scale, and have conducted a side-by-side comparison of measurements. See Figures 5A and 5B.

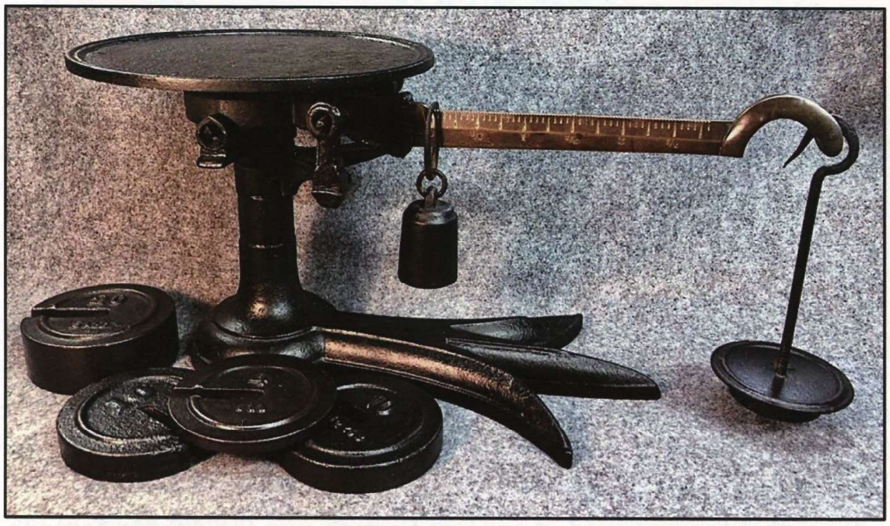


Figure 5A. ⮝⮝ Duryee & Forsyth 62 pound Grocer's Scale. Scale beam is graduated 0 to 2¾ pounds with proportional weights enabling a 62 pound maximum capacity. Note, the full set of proportional weights (two 20 lb., 10 lb., 8 lb. and 4 lb.) are not shown in the picture. This scale is identical to the Fairbanks Model # 1 (latter called Model #540), except for the brass beam and associated beam head. (Gregg and Amy Motter Collection)

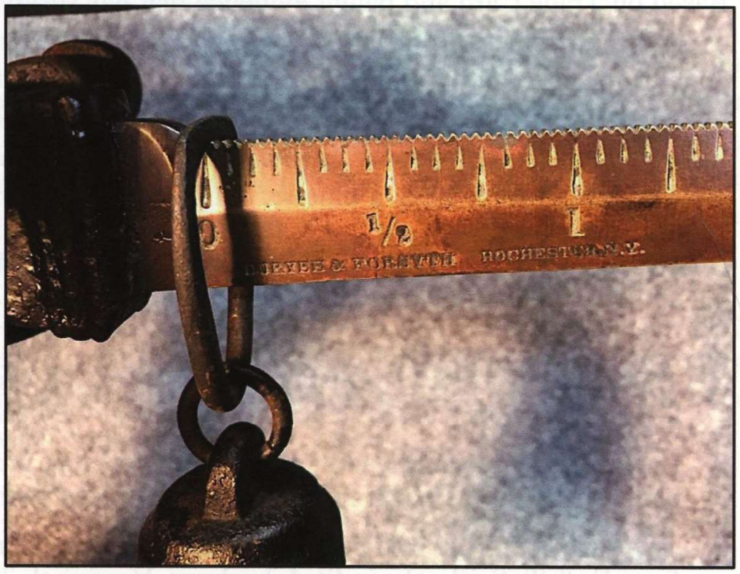


Figure 5B. ➢➢ Close-up of the brass beam showing Duryee & Forsyth's mark indicating it was made in Rochester, N.Y. Note how the beam graduations are slightly upwards facing, making it much easier to read, as a result of their unique beam cross-sectional design. (Gregg and Amy Motter Collection)

In 1851, Duryee and Forsyth decided to incorporate, forming a stock company with a very limited number of major investors to obtain the required capital for continued business growth. Among the investors was John H. Truex, who had his own scale manufacturing business, also located in Rochester. Truex became a major participant, and patentee, in Forsyth Scale Works to be discussed in Part II of this article.

In an 1854 *American Railroad Journal* article, Duryee & Forsyth's Fire King safes were described as: *"...are of superior finish, and contain materials proof against fire – as has been proved in all instances when subjected to tests. Recently one of their Fire King safes was in a large fire...with a large sum of money, books and papers, and all was preserved in good order..."*

Duryee & Forsyth's 'Rochester Scale' Serving the Erie Canal

In the 1820s, waterways were the only way to get large quantities of anything anywhere fast, transporting both freight and people. There were no highways as we know them today, and the new railroads covered a limited geography and ran on unreliable schedules.

During the peak of the Erie Canal construction, Chauncey Duryee won the bid (beating the New England companies) to design and build the weighing machine for Erie Canal freight boats to be located at the city of Rochester, named the Rochester Scale. This was Duryee's crowning achievement of his short weighing machine career. The scale had a capacity of 400 tons, and at the time was the largest canal boat weighing machine in the world! (The British had canals with freight boats and weigh machines prior to this time. Their boats were much smaller due to the design and dimensions of their canals, and hence did not require such large capacity scales.) Duryee's design was declared to be 'The Model Scale' for weighing canal boats on the Erie Canal, and other canal systems in the U.S. as well, at the time.

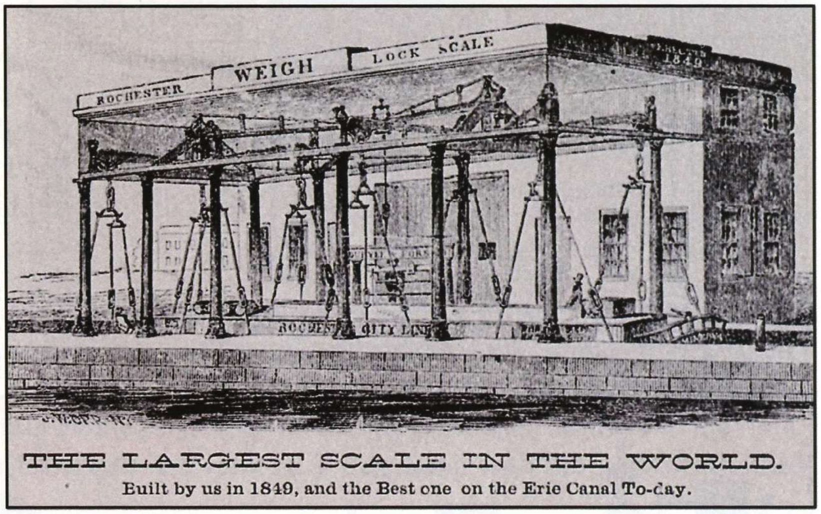

ROCHESTER WEIGH LOCK SCALE
ROCHESTER CITY LINE
THE LARGEST SCALE IN THE WORLD.
Built by us in 1849, and the Best one on the Erie Canal To-day.

Figure 6. ➢➢ Picture of the Rochester Weigh Lock Scale as it appears on the back cover of Duryee & Forsyth's 1850 catalog. This is a huge complex weighing machine:

- Eight main levers weighing 2,800 pounds each
- Two connecting levers running transversely weighing 2,300 pounds each
- 24 connecting rods, 24 feet in length, made of 2 inch round iron supporting the cradle
- Cradle was made of oak timber 80 feet in length and 20 feet in width bolted to the scale machinery
- Main bearings were tempered cast steel 13 inches in length
- Unique bearing plan (compared to existing weighing machinery of the time) was by means of an aperture through the bearing end of the lever a shoe was introduced to rest upon the pivot, or principle bearing, which could be moved as needed
- Length of scale: 80 feet
- Width of scale: 20 feet
- Height of scale: 32 feet
- Load Tonnage: 400 tons
- Weight of scale: 75 tons

In designing the Rochester Scale, Duryee developed entirely new methods of connecting the levers and determining the weight of cargo in a canal boat. Additionally, he connected his scale levers to a beam with a sliding poise for a direct readout of the loaded canal boat. Duryee applied for a U.S. patent for his unique design, but it does not appear to have ever been granted by the U.S. Patent Office. As mentioned above, there were prior patents from England to weigh canal boats, and in the U.S. from Jeremiah Brainerd (living in Rome, New York; close to Rochester) Patent # 1,249 issued July 17, 1839. One can only speculate if there was collaboration between Duryee and Brainerd on the Rochester Weigh Lock design.

Scientific gentlemen of the time, each with many accomplishments, declared it to be the most perfect machine known to the world in the mid-19th century. When weighing a 400 ton canal boat, a 10 pound weight would unbalance the beam in numerous tests conducted with loaded boats of known weight! Soon after Duryee completed the Rochester Scale, the State of Ohio ordered an identical weighing machine for their canal system!

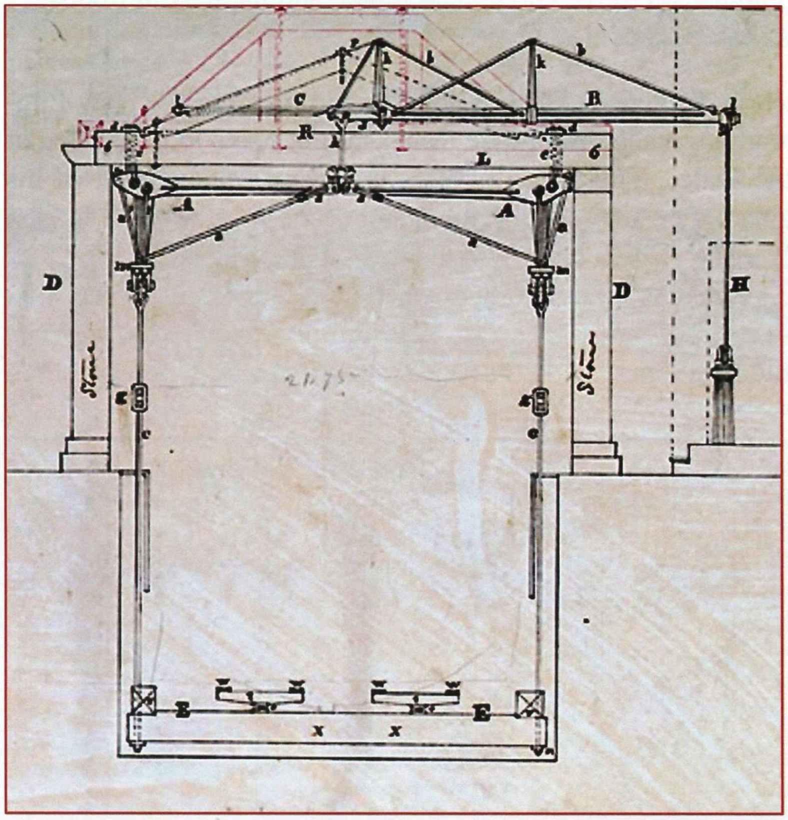


Figure 7A. << End elevation of the Rochester Scale, and load supporting framework. Drawing shown from the perspective of a boat entering the scale lock.

Description of a Weigh Lock Operation:

- Canal cargo boats were weighed to determine tolls owed for the use of state owned and maintained canals. It is interesting to note the toll due differed with the nature of the cargo, and the state adjusted the tolls depending on the economic and political climate of the moment.
- Canal boats were weighed each year, at the beginning of the shipping season, to determine the empty tare weight to be subtracted off all loads throughout the season to determine net tonnage of freight in the boat.
- Figure 7A above depicts one of the four sections of the Rochester Scale.
- Boat enters the lock, water is drained, and the boat settles onto the oak cradle.
- Scale works like any other platform scale, and each mark on the main beam represented a ton, up to 170 tons, or 340,000 pounds.
- For heavier loads, an additional weight representing 100 tons, or 200,000 pounds could be hung from the right end of the beam (Note - Drawing in Figure 7B envisions a second weight to counter balance another 100 tons, if needed in the future.

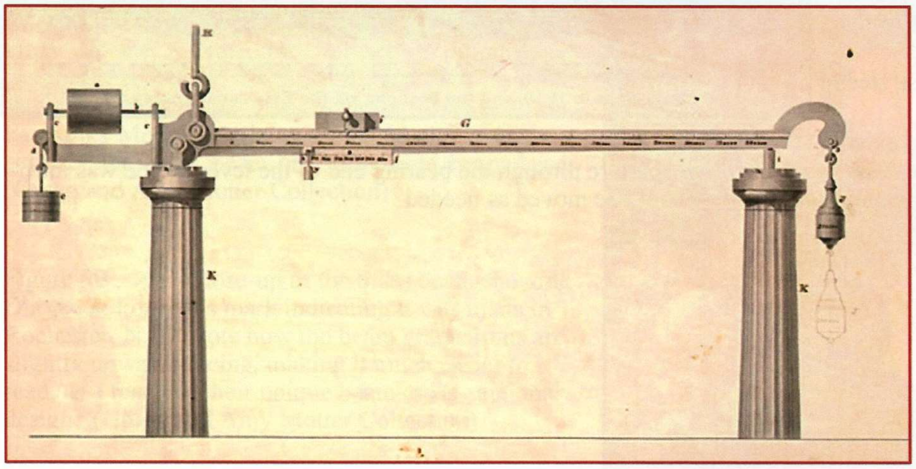


Figure 7B. << Scale Beam, circa 1850

After his success designing and installing the Rochester Scale, Duryee was honored at a banquet with a gold medal and a speech stating *"...wishing Mr. Duryee and his workmen every success and good fortune which enterprise so untiring and friendship based on relations so admirable and so just, very much deserve this recognition from their brother mechanics..."*

By this time, Duryee & Forsyth had scales in daily use throughout the northern and western U.S., Canada, Cuba, the Spice Islands and South America weighing everything from cargos on boats, gold dust, spices, bulk commodities and merchandise in shops. The Duryee & Forsyth scale business was now offering over 100 different types of scales as well as a broad range of safes! Their business growth was closely synchronized with the increasing reputation of the United States!

End of an Era

In 1855, Chauncey Duryee contracted a pulmonary disease, now known as Tuberculosis, and suffered with a severe cough for more than a year. A friend gave him a home remedy to help with the coughing which he jotted on the back of his business card. See Figure 8.

Duryee died on September 6, 1856 at age 39 in his Rochester home with family around him. He left his wife, Perlina Minerve Pierce Duryee (1812 – 1897) and seven children; Franklin Dyer Duryee (1836 – 1841), Fannie Dianna Duryee Austin (1839 – 1884), George Frederick Duryee (1840 – 1841), Julia Minerva Duryee Southworth (1844 – 1936) and Chauncey Duryee (1849 – 1932).

Upon Duryee's death, the business passed into the hands of Forsyth & Company consisting of Orrin Forsyth and John H. Truex who is listed in the *History of Monroe Country* as having his own scale works located at 5 Stewart, Rochester, N.Y. at that time. It did not take very long for Fairbanks, of St. Johnsbury, and Howe Scales of Rutland, both in Vermont, to fill Duryee's void for large canal boat and railroad weighing machines.

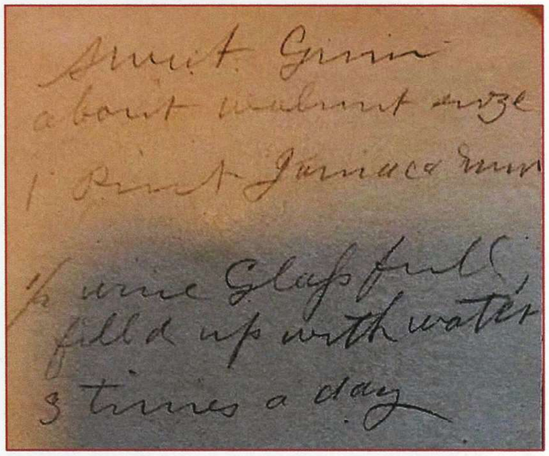

Sweet Gum
about walnut size
1 Pint Jamaica rum
½ wine Glaſs full,
filld up with water
3 times a day

Figure 8. ▲▲ Home remedy for severe cough in Duryee's handwriting (photo from his Great-Great Grandson) on the back of his business card. It reads: "Sweet gum, about Walnut size, 1 Pint Jamaican Rum, ½ or so wine glass, fill up with water, take three-times a day."

This is only the beginning of the Chauncey Duryee and Orrin Forsyth Scale Makers & Partners story. In Part II of the story, both O. Forsyth and J. Truex go forward to their respective fames inventing interesting, unique and innovative scales. There is a much larger story of weighing machine and scale innovation, patents, and interesting business interactions with numerous other scale makers of the time. Issue 3, 2020 of EQM, will focus on Orrin Forsyth and John H. Truex along with the story of Rochester Scale Works and Forsyth Scale Works.

Notes & References:

Chauncey Duryee is sometimes spelled as Duryea in some documents. Chauncey was born in 1817 in Cayuga County of New York, father died in 1827 leaving him all alone in the world, apprenticed himself to a Blacksmith at age 14, married Perlina Minerva Pierce in 1834, and partnered with Orrin Forsyth in 1845. His home was located at 45 North Street, Rochester. Chauncey died in Rochester, N.Y. in 1856, and was buried in Mount Hope Cemetery. Chauncey left behind a wife and seven children.

Orrin Forsyth is sometimes spelled as Owen and Forsyth is sometimes spelled as Forsythe in some of the literature and legal documents such as business names and ownership deeds.

Notes & References (*continued*):

Rochester Scale Works was located at 15 Water Street, Rochester, N.Y.; and did all of the foundry and machining work for both Duryee Manufacturer, and Duryee & Forsyth. Both Duryee Manufacturer and Duryee & Forsyth produced Trade Cards in conjunction with Rochester Scale Works advertising both firms. Rochester Scale Works was owned by H. J. Howe. Note, there is no relationship here to the Howe Scale Company in Rutland, Vermont; they were competitors.

Erie Canal:

- Part of the East–West, cross-state route built to create a navigable water route from New York City, and the Atlantic Ocean, to the Great Lakes, with no portages required.
- When completed in 1825, it was the second longest canal system in the world.
- At the time, bulk goods were limited to pack animals with a 250 pound maximum load, and there were no railways, water was the most cost-effective way to ship bulk goods.
- By 1883, more than $121 million in tolls were collected, which more than covered the cost of building the canal and all of the associated constant maintenance, operation and enlargement. Tolls were discontinued that year due to: (1) financial success of the canal, and (2) sustained economic viability due to competition with the railroads.

Acknowledgements:

The author wishes to thank the following individuals:

- Diana Crawforth-Hitchins, an ISASC founder, for bringing to my attention the Glamorganshire Canal and Somerset Canal weighing machines in England, their respective capabilities, and similarities to the Rochester Scale designed and built by Chauncey Duryee.
- Ben Smith, Jackson, Michigan, long-time ISASC member, for sharing his original research and documents from the Rochester, New York Historical Society.
- Trina Brown, Head Librarian, Smithsonian Libraries, National Museum of American History for Chauncey Duryee and Orrin Forsyth research on the individuals and their companies.

References:

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- Rochester Historical Society, correspondence with William Keeler, Head Librarian
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- Forsyth Scale Works 1850 Catalog – back cover photo of The Rochester Scale on The Erie Canal
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- *American Railway Review*, Public Works, Patents, Finance, Engineering, September 8, 1859, page 15 Advert for Rochester Scale & Safe Works
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- Smithsonian Institute, *Railroad Record & Journal of Commerce, Banking, & Statistics*, 1853, page 137
- *Elstner Publishing Co., The Industries of the City of Rochester*, Rochester, NY, 1888
- McKelvey, Blake, *Rochester's Mid-Years: Center of Genesee County Life, 1854 – 1884,* Published in *Rochester History,* Edited by Dexter Perkins, City Historian and Blake McKelvey, Assistant City Historian, Volume 2, July 1940
- Francis Lieber's *Stranger in America,* e-mail correspondence from Diana Crawforth-Hitchins, London
- USPTO.gov

KLIM “Spell it Backwards”

BY BILL BERNING

“Spell it backwards” was an advertising slogan of the Merrell-Soule Company of Syracuse, New York, for their powdered milk product Klim. Klim was available in cans with mixing directions printed on the back: *to make one quart, use one quart of water and 8 tablespoonfuls of Klim and mix.* Also on the back of the can was an offer of a free two tablespoon measure. It was just an inexpensive stamped tin measuring spoon with “KLIM” embossed on the handle. Mixing directions were also included for steamships and hotels: *pour five gallons of water into the mixing tank and add five pounds (one can) of Klim.*

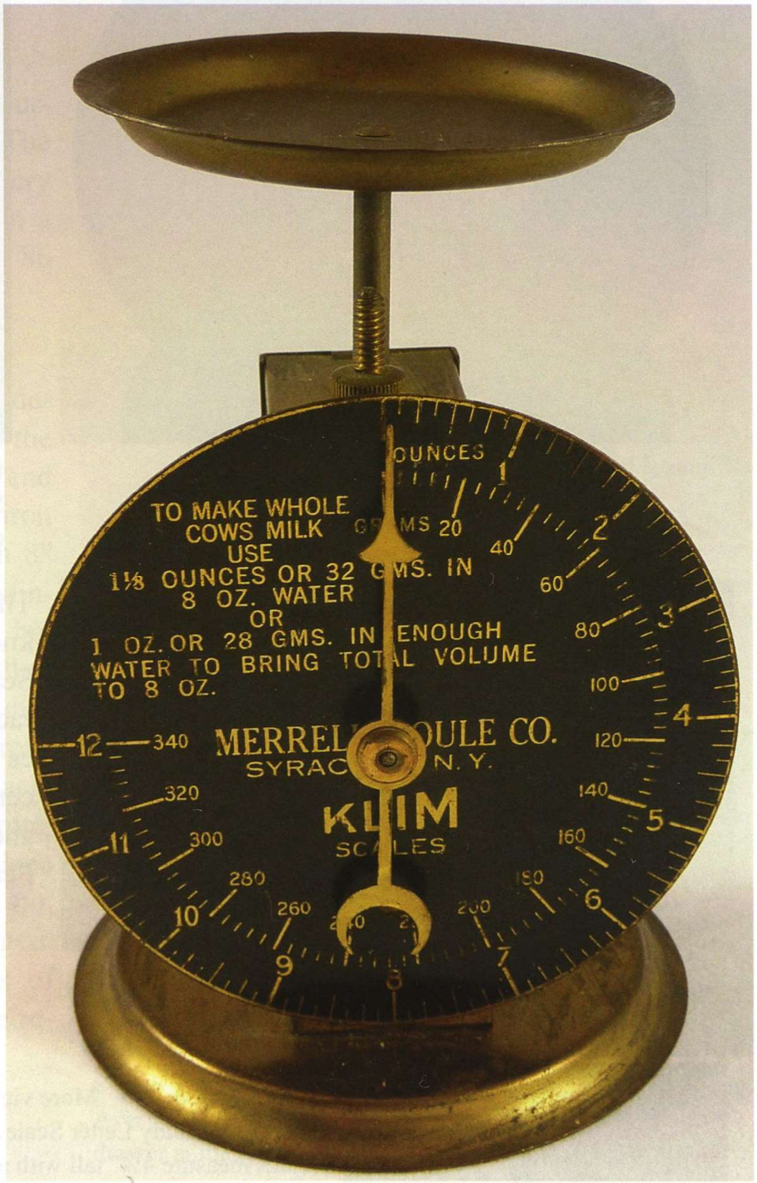


Figure 1. ▲▲ Klim scale made by J.R. Pearsall Manufacturing Company for Merrell-Soule Company of Syracuse, N.Y.

At least two scale collectors have these Klim scales in their collection. With so few of these scales known to collectors, there must not have been very many produced. I have been unable to find any ad or mention of this Klim scale. It is a very simple spring scale with a capacity of 12 ounces or 340 grams, economically made almost entirely of 12 gauge brass, about .021” thick. The lettering and numbers on the face are acid etched on this same brass. Stamped on the bottom of the scale is the name J.R. Pearsall Mfg. Co. Rochester, N.Y. Pat. Pend.

Mr. Pearsall was not a manufacturer of scales exclusively. Pearsall held several patents over the period of 1900 to 1922 including those for a camp stove, spinning top, toy bank, wagon jack, coin-controlled machine and a coin sorting device.

Liberty Thrift Bank Company with the name James R. Pearsall 15½ South Water St. is listed in the Rochester, New York, city directory in 1920. By 1922, he had an ad in the directory as a manufacturer of metal specialties including toy banks and letter scales. In the 1924 directory, Pearsall had added camp cookers and a screw and nut holder to his list of items produced. The name had also changed to J.R. Pearsall Manufacturing Company, adding Successors to Liberty Thrift Bank Company. Maybe by this point, the company had also grown, as the address was now 13 - 23 South Water St. Similar ads and listings appeared in the city directory for several more years, but completely disappeared after 1931.

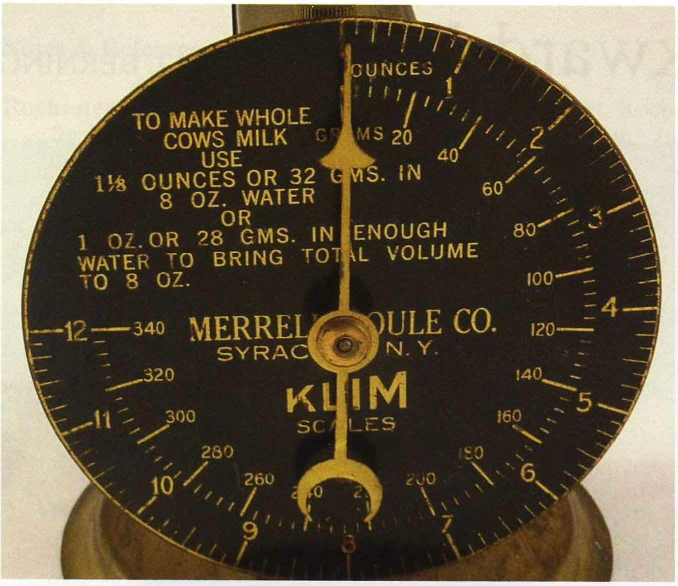

OUNCES
TO MAKE WHOLE COWS MILK USE 1⅛ OUNCES OR 32 GMS. IN 8 OZ. WATER OR 1 OZ. OR 28 GMS. IN ENOUGH WATER TO BRING TOTAL VOLUME TO 8 OZ.
GRAMS
MERRELL SOULE CO.
SYRACUSE N.Y.
KLIM
SCALES

Figure 2. ▲▲ Face of the KLIM Scale.

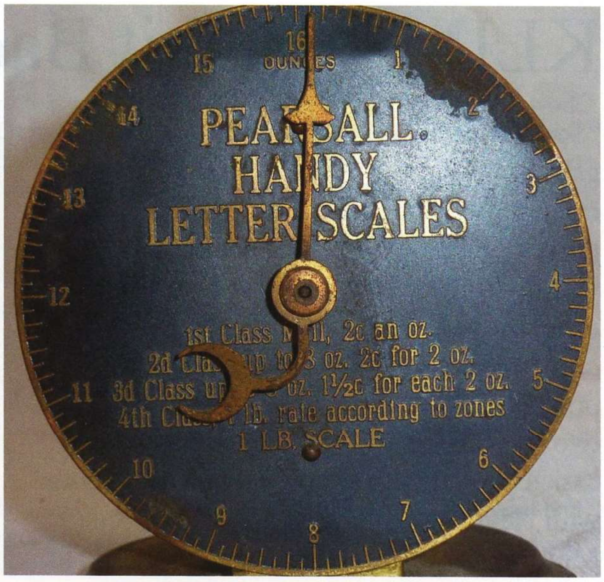

OUNCES
PEARSALL
HANDY
LETTER SCALES
1st Class Mail, 2c an oz.
2d Class up to 8 oz. 2c for 2 oz.
3d Class up to 8 oz. 1½c for each 2 oz.
4th Class, 1 lb. rate according to zones
1 LB. SCALE

Figure 3. ▲▲ The face of the Pearsall Handy Letter Scale is similar to that of the KLIM scale. The pointer on this example is bent.

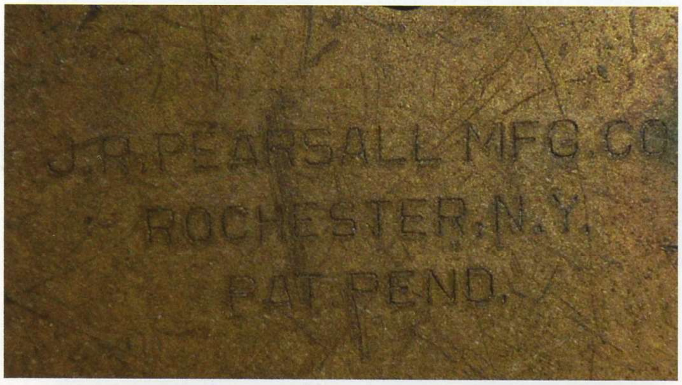
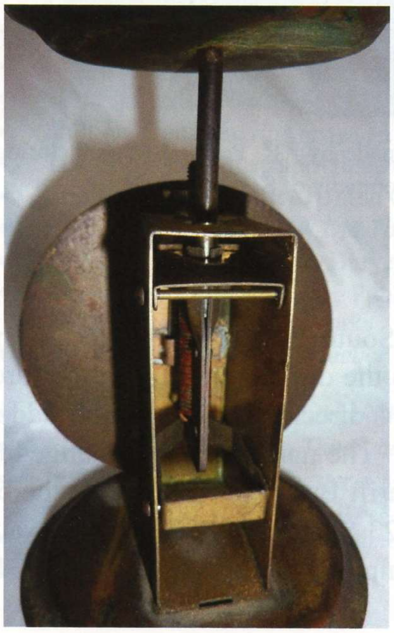
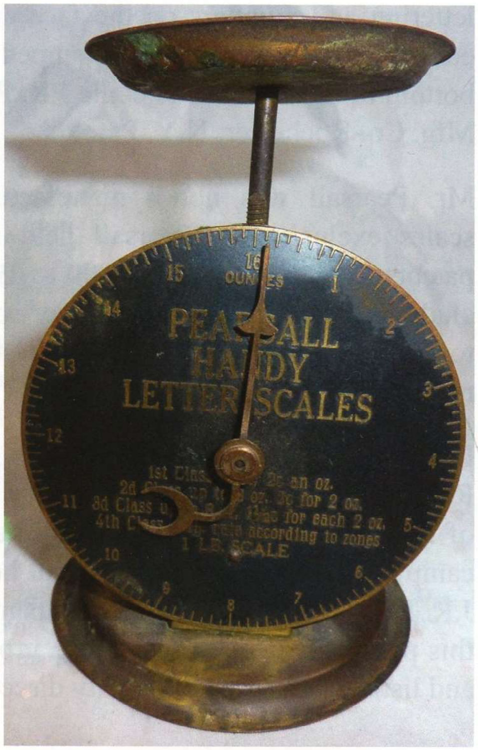


Figure 4. ▲▲ Stamped into the bottom of both scales is J.R. Pearsall Mfg. Co, Rochester, N.Y. Pat. Pend.

There are two similar versions of the scale known. The other is the "Pearsall Handy Letter Scale". It is the same scale with a different face. The letter scale has a capacity of 16 ounces and also lists the current postal rates of two cents per ounce for letters, also second, third and fourth class. Both have the same J. R. Pearsall Mfg. stamp on the bottom.





Figures 5 & 6. ◄► More views of Pearsall's Handy Letter Scale. These scales measure 4¼" tall with a base and face diameter of 3" and a plate diameter of 2½". In Figure 5, the back has been removed to show the rusty helical spring mechanism.

Collections of Les & Elaine Firth, Janet Terwilliger and Jan Berning.

Large Avery Scales Mounted on Box with Drawer

BY MALCOLM CAMPBELL

In November 2019, I was fortunate enough to purchase at auction a large set of Avery scales. The scales were advertised as “Large circa 1880 Avery brass Apothecary scales complete, mounted on a mahogany veneer base with drawer. Approx 86 cm high.”

The Beam

The beam (Figures 2 & 3) is 18” long and in description matches that of beam item 854 from the 1880 Avery catalogue. “Best bright oval box end bullion beam, with sight hole checks, bright iron or gun-metal”. The sizes available were from 8” to 24” and included 18”. I am not able to distinguish between bright iron and gun-metal but where this scale has been pinned into the pillar, the metal is bright iron looking and not dark dull as the rest currently appears. There are numerous places along the beam where it has flecks of black, it appears that the beam may have had Japanning on it at some time, or just black paint. Diana Crawforth-Hitchins has advised that she has not seen a beam with box ends japanned or painted. Not obviously rusted but perhaps 150 years of built up grime. More careful cleaning will be required.

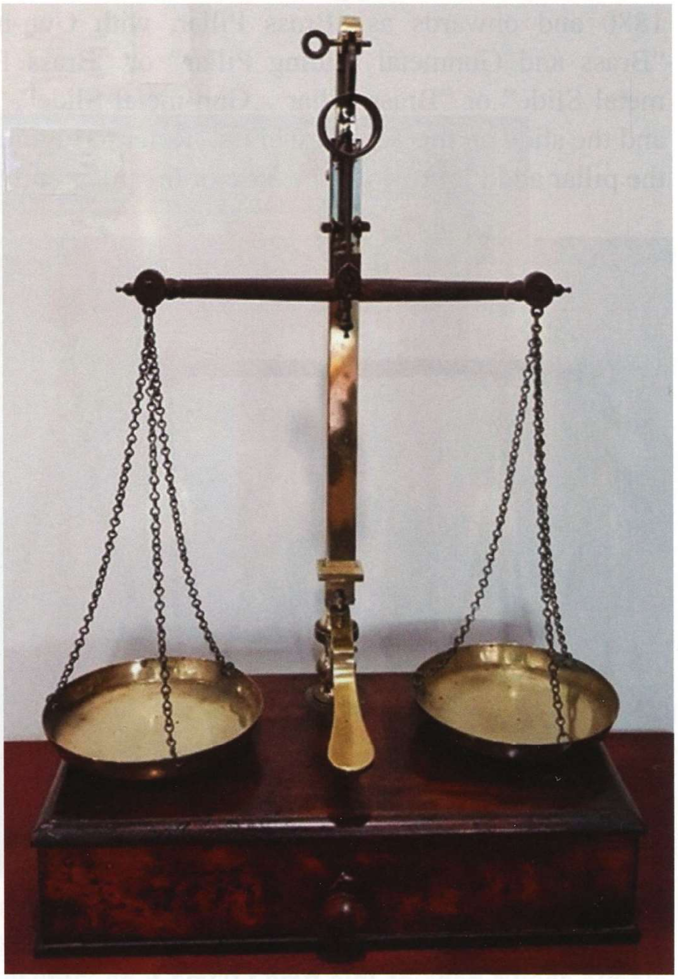
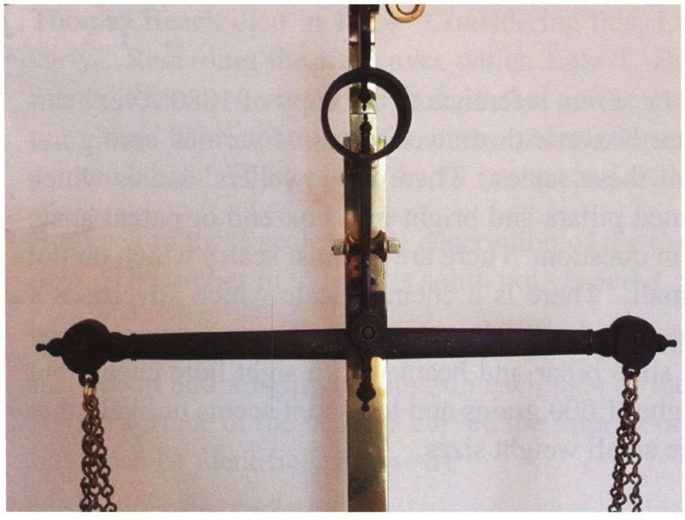


Figure 1. ⮝⮝ The only obvious visual evidence of being Avery scales is the Avery trade label (Figure 5) inside the drawer at the rear.



The sighting hole is also characteristic of an Analytical Scale, item 903 in both the Avery 1880 and 1885 catalogues.

Figure 2. ⮜⮜

Editor’s note: Approx 86 cm high equals 33.86”.

Figure 3. ➢➢

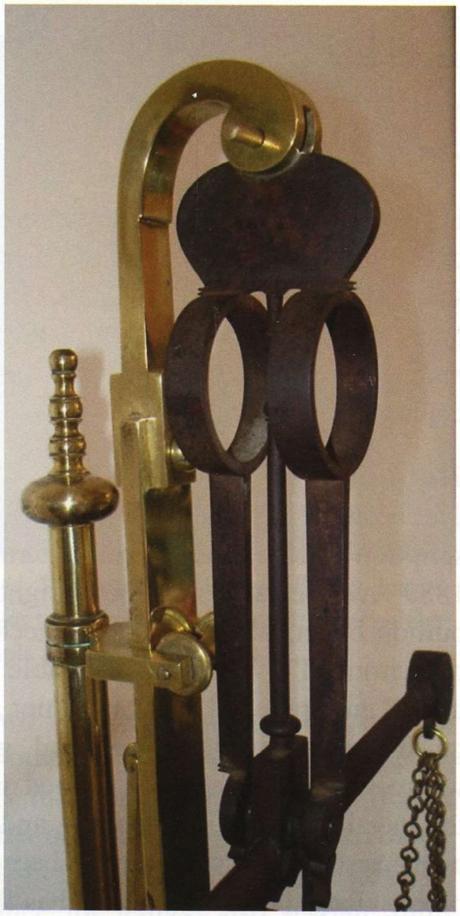
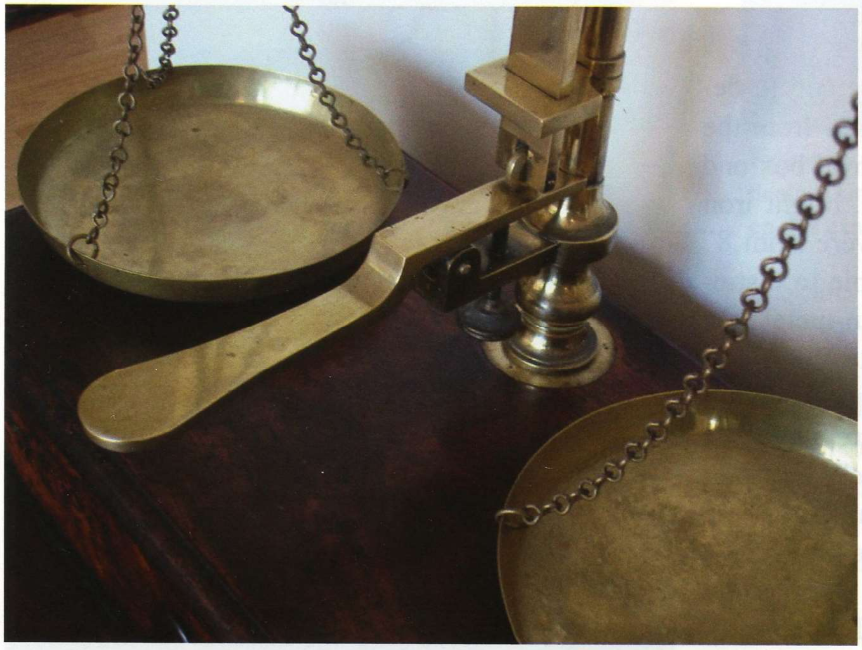


Figure 4. ⮜⮜

The Pillar

The pillar is brass, as is the slide, with a brass lever to lift the beam. Pillars of this nature appear to be described in Avery catalogues 1880 and onwards as "Brass Pillar, with Gun-metal Slide" or "Brass and Gunmetal Sliding Pillar" or "Brass Pillar and Gun-metal Slide" or "Brass Pillar ...Gun-metal Slide". Both the pillar and the slide on this scale are brass. Refer to Figure 3 for the top of the pillar and Figure 4 for the base of the pillar and the lever.



Scale Pans

The pans (Figure 4) are 8 ½" diameter polished hammered brass with raw edges. The 1880 Avery catalogue shows pans of this type. Type F as "Polished concave brass or copper scale with raw edges". Sizes available from 4½" to 9¼" and include 8½". Diana Crawforth-Hitchins advises that this type of pan was also used by Avery in 1830, and shown in scale number 877, although that scale had a different type of suspension and beam.

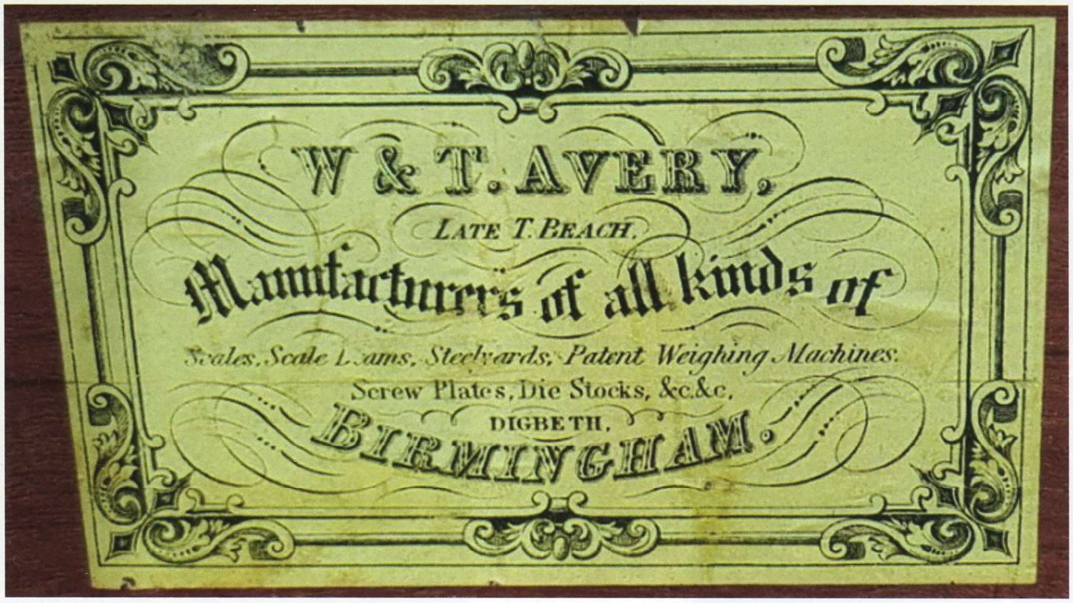
Box & Drawer

The box is 22" long x 12" wide x $5^1/_8$" high (Figure 1). From reference to my copy of 1880 Avery catalogue and Norman Biggs' 1885 catalogue; there are boxes with drawer scales of various configurations but none entirely meeting the characteristics of these scales. There are jewellers' scales which could accommodate beams of 18" but the brass jointed pillars and bright iron box-end or patent agate beams accompanying those do not match the scales in question. There are chemist scales which do not indicate beam lengths, so are believed to be too small. There is a chemist scale which advertises a range of beam lengths of 8" to 18" but the pillar, beam and pans do not match. There is an analytical scale with a glass case, which pictures a gun metal slide pillar and beam with a sight hole cheek, but the available weights to be sold with these were weights 1,000 grains and less, so it seems unlikely that a scale of the size in question would be used for these small weight sizes.

The drawer is lined with red velvet in reasonable condition and has a divided area (4½" x 4½") in the front righthand corner, to separate the weights. The beam and pans fit inside the drawer but the pillar is too long to fit.

The brass Tee Nut inset into the top of the drawer is circular, which seems consistent with other large Avery scales I have seen.

Trade Label & Labelling



W & T. AVERY,
LATE T. BEACH.
Manufacturers of all kinds of
Scales, Scale Beams, Steelyards, Patent Weighing Machines.
Screw Plates, Die Stocks, &c.&c.
DIGBETH,
BIRMINGHAM.

Figure 5. ▲▲

The trade label (Figure 5) is W & T. AVERY, LATE T. BEACH. L.H. Broadbent in his book *The Avery Business*, page 25, states that by this time the words "late T Beach" had disappeared from published references in the firms name[1]. He was referring to the death of William Avery in 1843. Yet a title page from an Avery catalogue circa 1850 (pg 31) carries reference to late T. Beach under the company name. In a letter of 1984, from Eric Parish, W & T Avery Museum Curator, to an enquirer regarding age of a set of steelyard & swan necked boxed beam scales, he indicated that reference to Late T. Beach indicated that the scales were made sometime between 1818 and 1840[2].

Thomas Beach died in 1824. Considering this, I think the 1818 reference point may be a little too early. Regarding the time over which Late T. Beach was referenced on trade labels or advertisements, there is a school of thought that references on labels in drawers and box lids and stamped pans may have continued for many years afterwards. Perhaps? - no point in wasting previously printed labels. The topic of Avery stamps and trade labels is one for another time.

But back to these scales. The description of the timber finish to the box and drawer is mahogany veneer. The timber in the box is solid, not veneered, and probably mahogany.

The pillar, beam and pans do not at first appear to have Avery identification markings but on close inspection and a light cleaning, on each side of the beam to the righthand side is a stamp, AVERY. As the surface of the beam is curved the imprint of the AVERY stamp is not uniformly on the metal, but it can be identified (Figure 6).

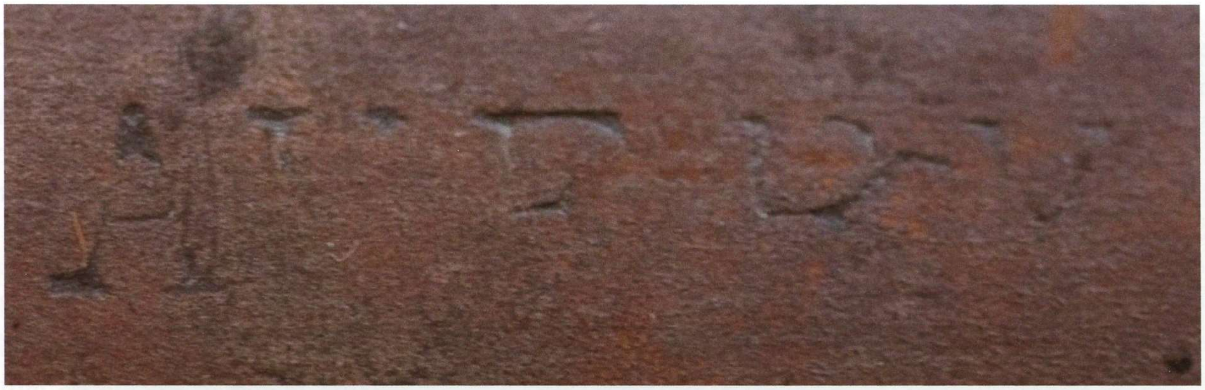


Figure 6. ⩓⩓

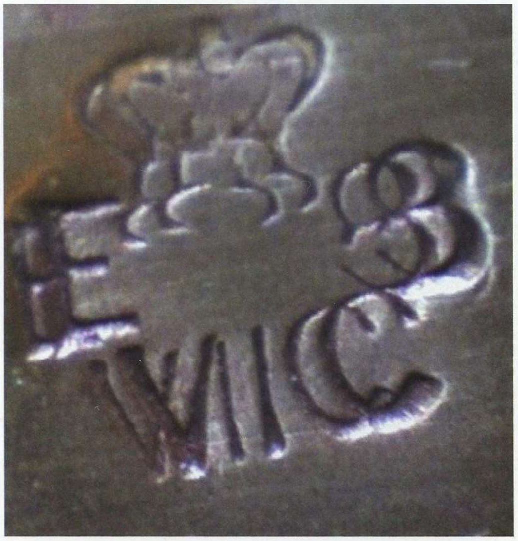


Figure 7. ⩓⩓

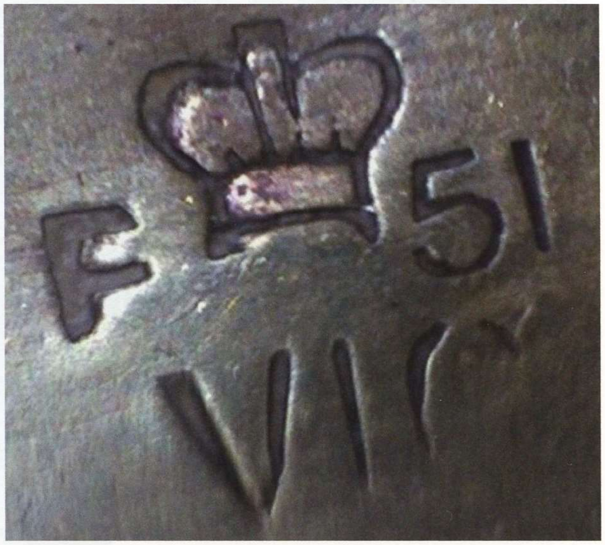


Figure 8. ⩓⩓

Victoria, Australia Verification Markings

Both pans have Victorian verification stamps on them. Both pans have Crown E 8 VIC[3] (Figure 7), which is the distinguishing mark of the City of Melbourne. The stamp is double and triple stamped, as surfaces were not flat and would have been difficult to stamp. The City of Melbourne used this distinguishing mark continuously between 1864 and the 1990s, when this system of verification ceased to operate.

One pan has Crown E 51 VIC[4] (Figure 8), which is the distinguishing mark of Gippsland Weights and Measures Union. Parts of the stamp have been missed, once again due to non flat surface when stamping. This weights and measures union consisted of the shires of Bairnsdale, Maffra, Rosedale, Avon, Traralgon, and Borough of Sale and was in existence as this distinguishing mark only between 1885 and 1888[5]. This region is between 160 and 280 km east of Melbourne.

On the top of the Tee Nut into which the pillar screws (Figure 9), after cleaning, a further stamp was revealed in four places around the rim. Crown E 18 VIC[6] (Figure 10), which is the distinguishing mark for Maryborough Weights and Measures Union. This weights and measures union consisted of the Borough of Maryborough and the Shire of Tullaroop and was in existence using this distinguishing mark only between 1864 and 1867[7]. Maryborough is approximately 170 km north west of Melbourne and in the central goldfields area. Gold was discovered in the area in 1854, and the last gold mine in the area closed in 1918, although small scale prospecting continues even today.

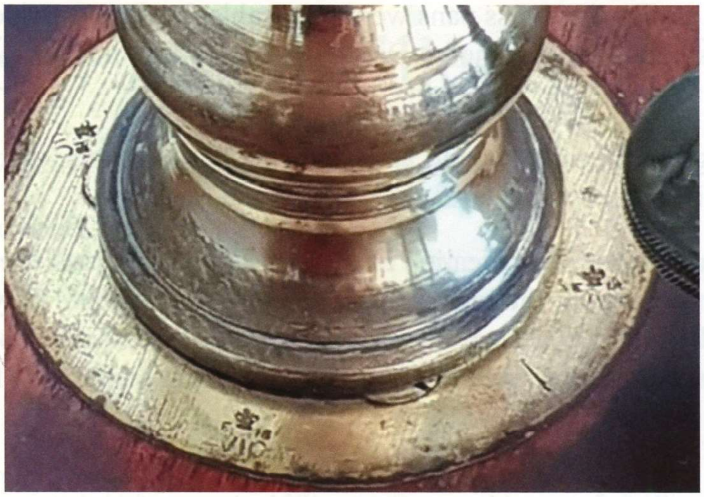


Figure 9. ⩓⩓

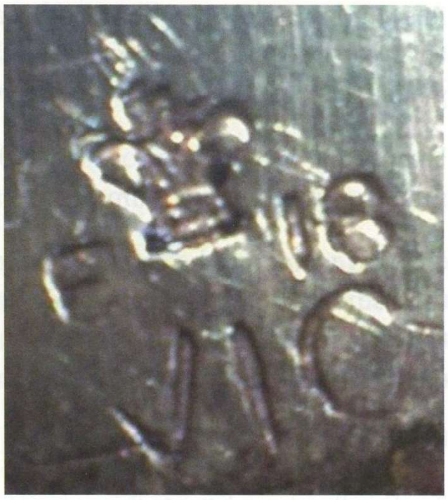


Figure 10. ⩓⩓

Other Similar Scales in Australia

I have searched the internet for images of similar sets of scales in Australia. Although not stated as Avery I have found two examples of similar looking and sized scales sold at auction in Victoria in 2015 and 2016. One was used at the Band of Hope & Albion Consols Gold Mining Company advertised as circa 1863 and sold together with a photographic display of the mine, as evidence of the provenance. The other was sold as a large set of cedar and brass gold scales with weights circa 1860, stamped W. Blews & Sons and bearing a plaque stating that the scales were used on the Goldfields of Bendigo, Vic, Aus. Circa 1860. It is unclear whether the scales or the weights were by W. Blews & Sons, but this is peripheral to the story.

Both scales are similarly sized, and have the same configuration of the pillar, slide and lever, but have obvious differences in having two knobs on the drawer and the tee nuts on the drawers have triangular surrounds.

Conclusion

The best reference, so far, to the timing of the usage of these scales, is from the Victorian verification markings. I know they were used between 1864 and 1867 in the Marybourough region and again between 1885 and 1888 in Gippsland, almost opposite from each other in direction and distance from Melbourne. They were also used at some point in time in the City of Melbourne.

So I am confident they can be dated as being used within Victoria during the 1860s.

But, I am not yet able to identify as a particular model or type of Avery scale. The earliest reference document I have is a copy of an 1880 Avery catalogue. Considering the size of the scale it seems to me to be intended for weighing of large weights, rather than smaller analytical weights. I am unable to match the pillar, the beam, the pans, and the box and drawer with any single item in the 1880 catalogue. The greatest number of matching variables are on Banker's and Inspector's Scales (item 163). But, they are on a three legged brass foot, not a box with drawer, but otherwise appear to match in style and size. Smilarly, reference to 1885 catalogue has not resulted in a match. The two catalogues contain similar subject matter.

Also, I do not know when apothecaries came to realise that brass pans were unsuitable for their use due to adverse reactions to chemicals they used. As pointed out to me by Diana Crawforth-Hitchins, druggist scales of the 1830's were offered with brass pans.

I know the scales date to the 1860s and although I think they would have been used by bankers, gold mines or gold buyers, I am not yet able to say this with certainty.

I would welcome the thoughts of readers in regard to the identification of the scales, their age and use, the use of Late T. Beach references in dating Avery scales, the timber of the box and drawer, and how they came to be in Australia. I also would welcome feedback on inconsistencies and any other references which readers may be able to point me towards as assistance to my further investigations.

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2. Eric Parish – a letter to the owner of a steelyard scale - W & T Avery Museum Curator 1984. A copy of this letter accompanied the steelyard I purchased.
3. Public Records of Victoria (PROV) – *Register of Authorised Copies of Standard Weights and Measures* Issues, 1864 –
4. Public Records of Victoria (PROV) – *Register of Authorised Copies of Standard Weights and Measures* Issues, 1864 –
5. Victorian Government Gazette Archives - Gazette No. 66, 20 Jul 1888
6. Public Records of Victoria (PROV) – *Register of Authorised Copies of Standard Weights and Measures* Issues, 1864 –
7. Victorian Government Gazette Archives - Gazette No 112, 8 Dec 1867

Acknowledgements:

- Thanks to Norman Biggs for cross checking his 1885 Avery catalogue, his thoughts, and encouragement.
- Thanks to Diana Crawforth-Hitchins for reviewing the material, information from Avery 1830 catalogue, suggestions and encouragement.

Editor's note:

Contact the author, Mal Campbell by email at camwens@bigpond.net.au

Old Advert

This old post card featuring Fairbanks Scale Factory, St. Johnsbury, VT was postmarked May 22, 1911, making it at least 109 years old.

1857 Maranville Coin Tester, 2 BY MALCOLM MATHIAS

This article is continued from EQM Issue 1 of 2020.

Who was Charles E Staples?

Maranville invented his 1857 Coin Tester in Clinton, Ohio, but had it made by Charles Staples many miles away in Worcester, Massachusetts. There were no railways in Ohio until the early 1870s. It was the era of wagon trains heading west to open new country for European settlers. Why did Maranville choose to have his 1857 Coin Tester made by Charles E Staples who worked 600+ miles away in Worcester, Massachusetts?

The answer to this question probably has three components:

1. The Ohio-Erie Canal
2. Worcester Industry was known for "precision engineering."
3. Maranville - born in Poultney, Vermont, had trained as an engineer and arrived in Clinton in 1833, just after the completion of the Ohio-Erie canal.

The Ohio-Erie Canal

George Washington first proposed the idea of a canal connecting the Great Lakes to the Ohio-Mississippi River System in 1784. Inspired by the Erie Canal in New York, the State of Ohio began surveying routes in 1822 for its own grand internal improvement project. Completed to Portsmouth a decade later (October 15, 1832), the 309-mile-long Ohio and Erie Canal connected Cleveland, Akron, Massillon, Dover, Roscoe, Newark, Columbus, Circleville, Chillicothe, Waverly, and Portsmouth. Success was immediate, as this vital transportation link provided access to Eastern markets. Within a span of 35 years, canals transformed Ohio from a rural frontier wilderness into the nation's leader in agricultural output and third most populous state by 1860. Railroads marked the end of the canal as an economic engine, but traffic continued to operate until the Great Flood of 1913 destroyed the system as a commercial enterprise. Today, the Ohio and Eric Canal is enjoying a rebirth as a recreational resource.

Towns along the Ohio and Erie Canal on the 54-mile-long Upper Tuscarawas Valley section include Clinton, Canal, Fulton, Massillon, Navarre, Bolivar. Zoar, Dover, Southside (New Philadelphia), Oldtown, New Castle, and Goshen. (Triplett, *Ohio & Erie Canal*, p49).

The work on the Ohio Canal began in 1825 and many came to Clinton – doctors, lawyers, merchants, farmers, millers, tinsmiths, tailors, shoemakers, carpenters, warehousemen, preachers, and teachers. Most were of German and Pennsylvania Dutch origin. Some were English. On June 27, 1827, the canal boat "The Ohio" was the first to navigate the canal.

Clinton's growth paralleled the opening of the Ohio and Erie Canal. John Bradford built the first hotel in Clinton in 1825 to accommodate canal labourers constructing the Ohio and Erie Canal. The Bradford (Union) Hotel was located on the south side of Main Street and remained there until fire destroyed the building in 1935.

High overland transportation prices prevented many from getting their products to market. With the building of the canal, freight prices became more reasonable and products could be sent many miles and still be profitable. Because of the many markets made available by canal transportation, the prices of wheat went from twenty-five cents to one dollar a bushel. Potatoes that could hardly be given away went to forty cents a bushel.

Clinton, Ohio is named for the "Father of the Erie Canal," New York governor DeWitt Clinton.

Clinton served as the main marketplace for the area farmers from Stark, Wayne, and southern Medina Counties. The main crop sold in the community was grain. According to the 1850 U.S. Census *Productions of Agriculture Schedule*, 155 Franklin farmers produced a total of 38,416 bushels of wheat, 33,385 bushels of Indian corn, and 20,695 bushels of oats.

Worcester Industry

A combination of inventive genius and forward-thinking entrepreneurs laid the foundation of a diverse industrial economy in Worcester, Massachusetts, after 1825, overcoming the geographic location and lack of waterpower that made an unlikely place for an industrial city. The Blackstone Canal linked Worcester and Providence, Rhode Island, in 1828, and the railroads first opened between Worcester and Boston in 1835. The transportation improvements made Worcester a crossroads and offered the possibility of large-scale manufacturing for distant markets.

Local entrepreneurs Stephen Salisbury II and William T. Merrifield began to build factories and to rent space with power to new manufacturers. These factories were a major reason for Worcester's growing diversity as well as its climate of innovation. They made it possible for mechanics to go into business cheaply and created an environment that encouraged risk-taking. Many skilled workers took advantage of the opportunity to start small firms of their own after periods of training in local shops.

Worchester, Massachusetts, in the 19th Century.

In the early 1800s, inventive machine builders and far-sighted investors laid the foundations for Worcester's industrial success. Inventive mechanics like Ichabod Washburn also played a central role in the changing economy of nineteenth-century Worcester. Washburn founded a wire-making firm in 1831 that became the largest in the nation. He devised new wire-drawing processes that led to exponential increases in output. Washburn and other successful manufacturers became influential members of the community as they became employers of large numbers of men and women.

Transportation improvements were critical to making Worcester an industrial city. Irish labourers completed the Providence-to-Worcester Canal in 1828, and the Boston-to-Worcester railroad in 1835. The new transport routes made it possible for local manufacturers to obtain raw materials and ship finished goods relatively cheaply and in large quantities. By the 1850s, the city had become a hub in the regional rail system, giving Worcester businessmen a cost advantage over outlying competitors. With these developments, Worcester, formerly a farming community, became an industrial boom town.

The opening of Mechanics Hall in 1857 symbolized the growing social influence of manufacturers and a new sharing of power with the older elite of bankers, traders, and lawyers. By the time of the U.S. Civil War, Worcester was considered a "paradise for mechanics."

Worcester emerged as a centre of manufacturing more than 150 years ago. From the start, local investors encouraged small-scale experimentation and innovation. As a result, Worcester served as an incubator for many industries. Even today, it remains unsurpassed among mid-sized cities in America in the variety of goods produced.

Innovative spirit and product diversity are the hallmarks of Worcester's industrial legacy.

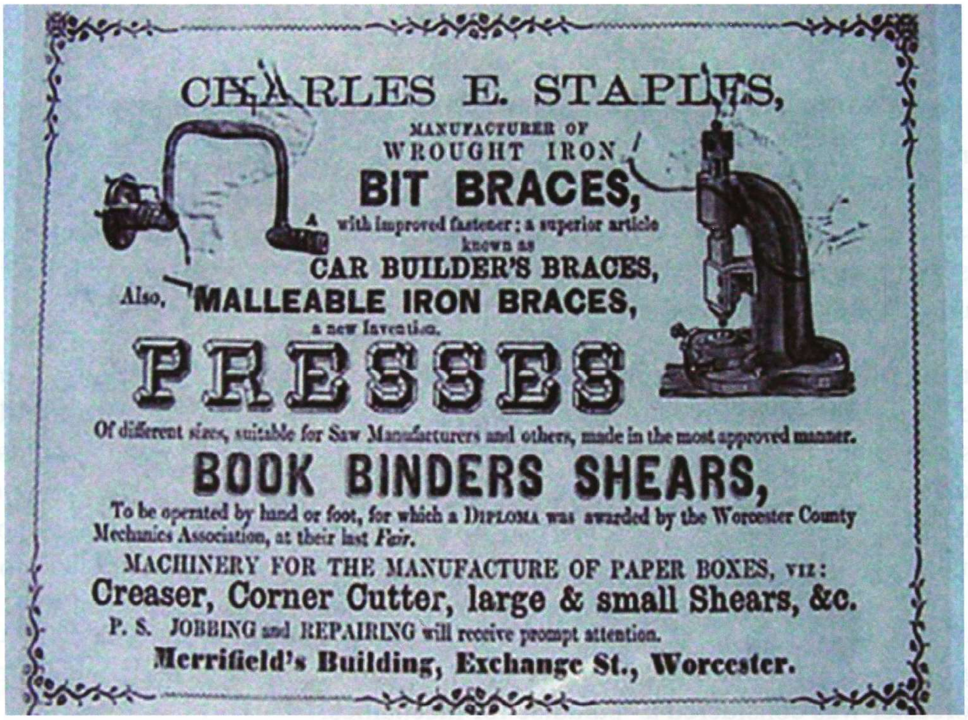
Charles E. Staples (1821 – 1909)
Charles Edwin Staples was born at Uxbridge, Massachusetts on February 14, 1821 and died on June 6, 1909 at 31 Lancaster Street, Worcester, Mass, aged 88 years 3 months 23 days. He is buried at Hope Cemetery, Worcester, Mass.

Charles E. Staples married his first wife Mary Ann Metcalf (1822-1854) in Worcester on September 7, 1842 Mary Ann (Metcalf) Staples died in 1854 and is buried at Hope Cemetery, Worcester, Mass. The couple had a son, Edwin Metcalf Staples in 1847, but he was killed during the Civil War in 1865. He was Private Edwin Metcalf Staples of the 2nd Regiment Massachusetts Heavy Artillery and he is buried at Hope Cemetery, Worcester, Mass.

Charles E. Staples married again, this time to Lois Amanda Scott (1827-1912). She is also buried in the family plot at Hope Cemetery, Worcester, Mass.

Three Staples are listed in the Worcester Directory of 1860:

1. The father Charles Staples (Senior) : *Staples, Charles, machinist, h 4 School [49 Central*
2. Charles Staples (Junior), the son of Charles Staples (Senior) above *Staples, Charles E. manuf'r bitstocks, &c, Exch. H*
3. An unknown relative, *Staples, Samuel E. produce dealer, Foster, h 23*



CHARLES E. STAPLES,

MANUFACTURER OF

WROUGHT IRON

BIT BRACES,

A with improved fastener: a superior article known as

CAR BUILDER'S BRACES,

Also, MALLEABLE IRON BRACES,

a new Invention.

PRESSES

Of different sizes, suitable for Saw Manufacturers and others, made in the most approved manner.

BOOK BINDERS SHEARS,

To be operated by hand or foot, for which a DIPLOMA was awarded by the Worcester County Mechanics Association, at their last *Fair*.

MACHINERY FOR THE MANUFACTURE OF PAPER BOXES, viz:

Creaser, Corner Cutter, large & small Shears, &c.

P. S. JOBBING and REPAIRING will receive prompt attention.

Merrifield's Building, Exchange St., Worcester.

Charles Edwin Staples made "braces, clamps, bookbinders presses, and shears" in 1860. An undated advertisement shows his wrought iron bit braces "with improved fastener." Also advertised are "Car Builder's Braces, Malleable Iron Braces, a new invention". Further products included "Presses of different sizes suitable for saw manufacturers, Book Binders Shears, machinery for the manufacture of Paper Boxes ..." The firm was in Merrifield's Building, Exchange St., Worcester, Massachusetts.

The Merrifield buildings, measured over 1,100 feet in length, 50 feet in width, and 3 stories in height. The area of the floors was over 4½ acres; the power was obtained from a 350 horse-power engine.

The Merrifield buildings were burned to the ground on June 14, 1854. The newspapers of the day (*The National Aegis*, June 21, 1854) reported that tenants lost $500,000 worth of property, and 1,000 men were thrown out of employment. The individual tenants were identified, with Charles E. Staples suffering a $500 loss.

In 1859, Mr. Merrifield had leased rooms and power in his buildings to over 50 firms, each employing from 2 to 80 employees. Among them was Charles E. Staples, with seven hands, who made bitstocks and window springs, and did light jobbing.

Charles E. Staples probably had the manufacturing capacity to make more than 100 CCDs for Maranville, but Maranville may have restricted the first batch to 100 to see how well they sold to the public. It is highly probable, but not certain that Staples shipped the box of 100 Coin Testers to Maranville in Clinton via the Ohio and Erie Canal system.

It is probable that later batches were also limited to 100 per production run and shipped from Worcester to Clinton, Ohio, via the Ohio and Erie Canal system. Surviving examples suggest there were as many as six batches, which means that Staples perhaps made as many as 600 examples of Maranville's 1857 Coin Tester.

A detailed Pictorial Census of the 39 "known" surviving examples of Maranville's 1857 Coin Tester will be in Issue 3 of EQM.

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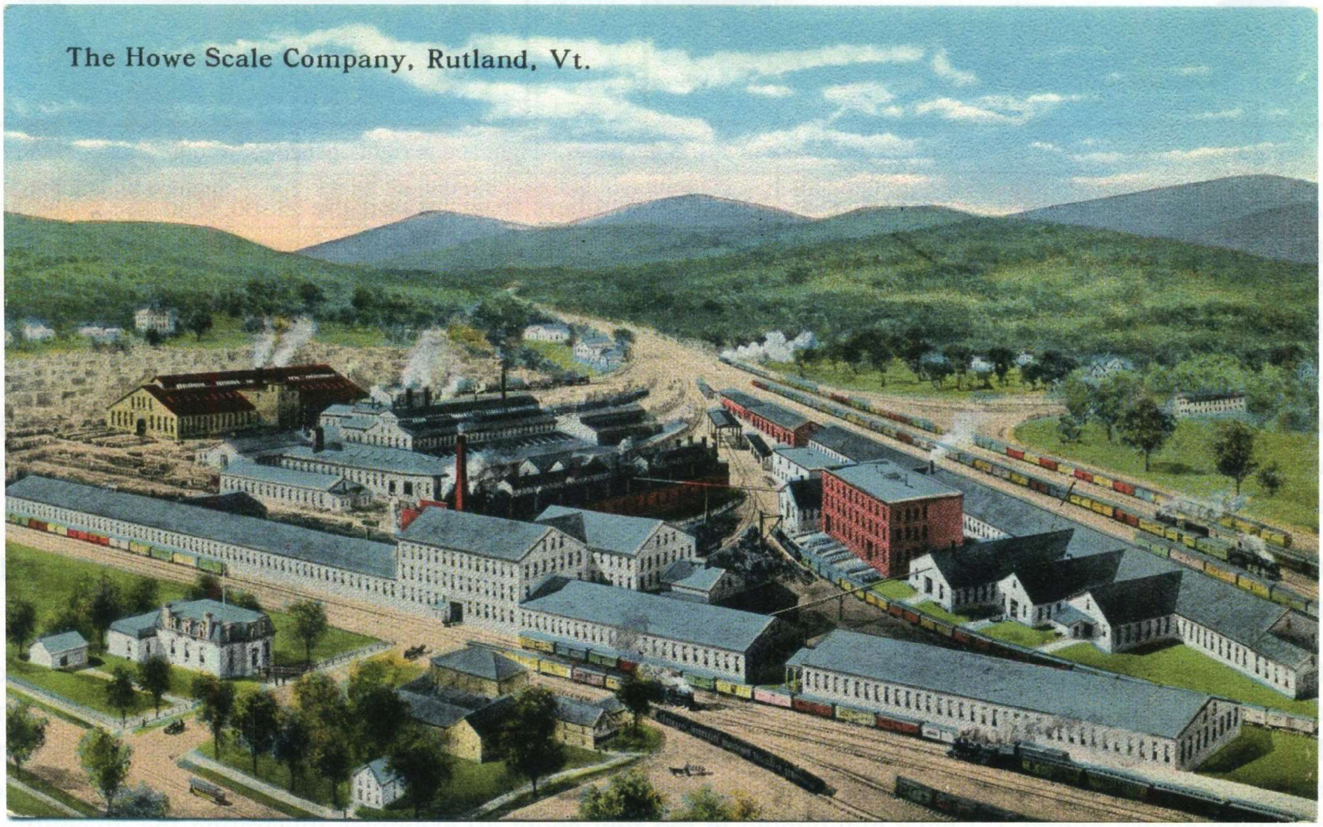
Old Advert


The Howe Scale Company, Rutland, Vt.

Old postcard showing a bird's eye view of the Howe Scale Company in Rutland Vermont. Date unknown.

The Evocative Scale Queen…New Information & Analysis

BY GREGG MOTTER

Over the years, ISASC has published two articles on the Scale Queen desk paperweight and its ability to transform into a small letter scale. The original article written by G. Wehman on pages 2340 to 2343, and more recently by myself on pages 4643 to 4649.

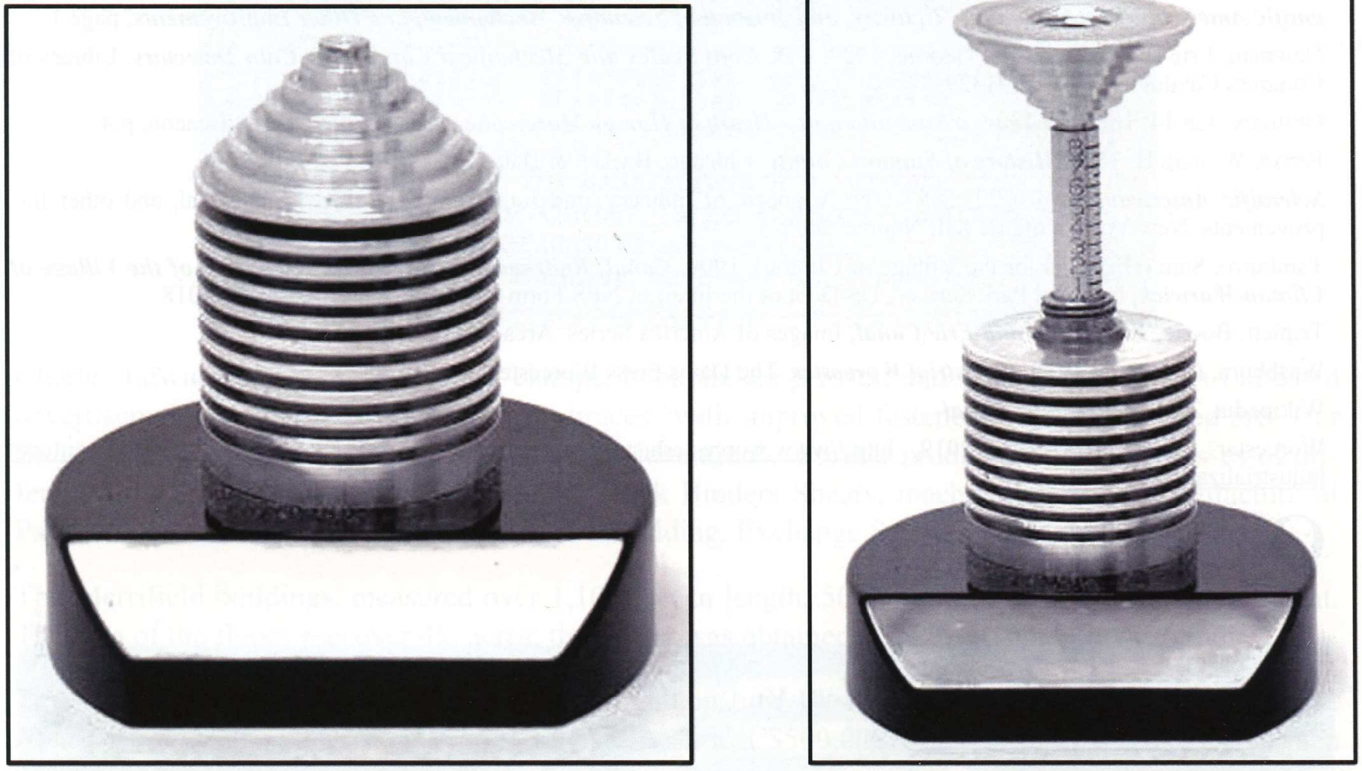


Figure 1. ▲▲ The "Scale Queen" pictured here at left as the paper weight and at right opened to become a letter scale.

After this most recent article, I had several ISASC members from around the globe send me notes and pictures containing a treasure trove of additional information on this unique letter scale. This article is strictly an update sharing the new information within our community, and will not repeat any information from past articles in the interest of brevity.

The first interesting note came from André Sol in The Netherlands. He shared his records of 142 Scale Queens offered for sale on ebay from April 2001 to April 2018. In his documentation, he tracked whether or not the scale had any advertising, the name of the advertiser, and color of the base. An amazing, and very detailed, piece of work.

Other members also shared with me the advertisers, and base color, of units in their collections. Additionally, I asked our ISASC Museum for an inventory of the scales in our society's collection.

Our combined data has now observed 147 discrete advertisers from just about every imaginable type of commercial business from coast-to-coast in the U.S., including Alaska. Refer to Figure 2. In preparing Figure 2, I eliminated numerous duplicate advertisers from the table. In some observations, the company name or city and state location information is vague, but that is all that was recorded from the scale. Scanning across Figure 2, I have highlighted in red font about 40 examples illustrating the diversity of commercial enterprises utilizing this little paperweight and scale to carry their advertising.

Figure 2. ∀∀ Summary of 147 Known Scale Queen Advertisers			A. H. Leathers, Dickson, Tennessee	A.H.M.
A&H **Plumbing** Supply Company	Allied Bldg. **Credit** Cleveland, Ohio	Allied Labs, Newark, New Jersey	Alsip **Funeral** Chapel	Anchor **Photo** Supply
Arctic Office Mach. Anchorage	Baum For **Castings** Chicago, Illinois	Bill Clark Truck Alamosa, Colorado	Bladensburg Blueprint Shop	Allen **Vegetables**, Raymondville, Texas
Cammer **Tire** Co., Winchester, Virginia	Carey Scale Co., Los Angeles, California	Carter-Roberts **Pharmacy**	Central Nat. Ins. Omaha, Nebraska	Claude Phifer City **Fuel** Co.
Cludius Optician, Flanders	Consolidated Hide & Metal, Asheville	Contractors Equip. Parkersburg, W. V.	Credit Clearing & Adjustment Co.	Curry Miller Indianapolis, Indiana
Dave Finkelman **Real Estate** Middletown, Ohio	Dick Ellis **Steel** Co.	Earl W. Bunnell Pueblo **News** Agcy.	Eastern Michigan Orchard Supply Farmington, Mich.	Elliott **Scale** Service Scales
Evans Chemetics Inc Mfg. Chemists	Evans Prescription Stores	F. W. Price **Advertising**	Farm Bureau Life Charleston, W. V.	Farm Bureau Life Lima Region
Frank Chambers Birmingham, Alab.	Frank J. Kozlak **Insurance**	G&W Mach. Shop Minster, Ohio	G.M.Z.	General Sales & Service, Peoria, Ill.
Gilcrease Oil Co.	Greenbaum Bros. Cleveland, Ohio	Greensburg Motor Pittsburgh, Penn.	Hakan-Johnson Chem. Pomona,CA	Hamilton **Concrete** Products Inc.
Hampshire **Paper** Florence, Mass.	Harrisonburg Loan & Thrift Corp., Harrisonburg, VA	Harry Cooper Supply Springfield, MO	Hartung & Co. Philadelphia, Penn.	Hewitt
Heyl & Patterson Contract Eng. Pittsburgh, Penn.	Holmes-Talcot Const. Equip., Hartford, CT	Home Building & Savings Co.	Idaho Artcraft **Engraving**	Indiana **Paint** and Color Co.
Ivo W. Buddeke & Co. Insurance	J.H. Mailander Co. Inc.	John F. Brady Co. Printers	John Winer	John Wsol
Joyce Morris Creations, NYC	Kansas City **Title Insurance** Co.	Kantar Provision Minneapolis, Minn.	Kenmare **Laundry**	Kirk's Rx Shop
Lady Perfection **Mattress**	Leedy & Ludwig, Elkhart, Indiana	Leroy Grannis	Lewis Pharmacy Inc.	Liberty **Optical** Mfg. Co.
LoMar's Pharmacy	Louis H. Amsler Co., Inc.	Luttenberger & Warm Air Heating	Manncraft Display Kansas City, Mo	Martini Die and Engineering Co.
Mays **Coal** Co., Clarion, Penn.	MBS	Menzie **Dairy** Co., McKeesport, Penn.	Meyer Mfg. Corp., Lynn, Indiana	Michaell Flynn **Windows & Doors**
Mike Green Seal Test Products	Modern Transfer Allentown, Penn.	Morrow **Truck** Evansville, Indiana	Newco Fiber Co.	O. E. Woods Lumber
Ohio Building, Akron, Ohio	Ohio **Gravel** Co.	Oklahoma City Abstract	Olsen-Quick Refrig. Eugene, Oregon	P. W. Price Advertising
P.L. Farmer Inc., Richmond, Virginia	**Paper Mill** Supply, Inc., Hoboken, N. J.	Parish Transfer Line, Frankfort	Peerless Coal Inc., Cleveland, Ohio	Penny Saver Ads
Philip Cass Co., Philadelphia, Penn.	Pioneer **Bank**	Pleasant Ridge Birmingham, Mich.	Prim-Starch-White Cincinnati, Ohio	Pro-Min, Shamblen Mill, Omaha, Neb.
R-L-M Pointing Company	Racine **Foundry** & Mfg., Detroit, MI	Rad-Mar Press Co., Toledo, Ohio	Radiant Fuel & Heating Co.	Rieke Elevator & Supply Co.
Ruth DeJarnette, Thearle Music Co.	Sam McDaniel & Sons **Canned Beef** Bedford, Virginia	Shafer Plow, Inc., Pratt, Kansas	Shawver Insurance Seymour, Texas	SKF
Skunk Mfg. Inc.	Southern Refrig. Dallas, Texas	Southern Transfer & Storage Co.	Southland Investment **Loans**	Southwest Tile Company
Spring & Wire Cleveland, Ohio	Stauffer **Chemicals** Weslaco, Texas	Stuart **Vault Work** Bremen, Ohio	Taylor Products Toledo, Ohio	Technical Print Duluth, Minn.
Tel-e-lect Products	Templeton **Pontiac** Fayetteville, NC	Tennessee **Glove** Tullahoma, Tenn.	The Central Nat. Insurance Omaha, NE	The Flintlock Indust. Prod. Div.
The Holmes-Talcott Construct Equipment	The Kemper-Thomas Cincinnati, Ohio	*The Locust Pin Front Royal, Virginia*	*The Miami Petro. Product Troy, Ohio*	The OHIO Company
The Repperts, Buckner, Missouri	The Royal Press	The Tannewitz , Gd. Rapids, Mich.	The Williamson Heater Co., Ohio	Thibaut **Wallpapers**
Thomas & Riggs	**Timber** Products Sales, Newark, N. J.	Toledo Scale Co.	Unangst **Real Estate**	Unit Structures, Inc., Peshtigo, Wisconsin
United Dispensing **Opticians**	Vaccaro Line	Walman Optical Co. 35th Anniv.	Warfel **Printers** Inc. Richmond, Indiana	We Value Your Friendship
West Freedom Mining Company	Western **Lumber** Sales	Wilcox-Sudders Inc.	Williams Printing	Wolverine Ins. Co., Lansing, Michigan

The top part of the table in Figure 3 summarizes the 303 observed Scale Queens that were produced in 10 base colors over the years. By far, the most common design was the black base, with or without advertising, which comprises 72% of the observed population.

Scale Queen		
Base Color	**No Advertising**	**Identified Advertising**
Black	70	148
Brown	10	17
Blue	4	2
Marbled Green White	7	1
Marbled Rose White	7	0
White with Blue Veins	2	0
Not Recorded	28	2
Wood	2	
Round Plastic	2	
Scale Queen (Black Base w/ Brass Metal)	1	
Totals	**133 +**	**170**
Other Design Varitions		
Scale King	5	1
Bowling Ball	12	1
Postmaster Diabolo	14	5
Economizer with Sandglass	1	1
Totals	**32**	**8**
	133 + 32 **=165 No Ad**	**170 + 8** **= 178 w/ Ads**

Figure 3. ≺≺ Summary of 343 Scale Queens observed from 2001 to 2019 in collections contained 14 variations of design, base color and construction.

When investigating the design variations alone, 88% were the typical Scale Queens, whereas the remaining 12% were Scale Kings, Bowling Ball, and other base designs. Some of the bowling ball scales were trophies (see figure 4). Surprisingly, 48% of the scales contained no advertising! To me, that indicates these scales were also sold in office supply stores for personal use, or as gifts.

The Scale Queen paperweight and letter scale was designed in 1948 by Arnold M. and Melvin D. Thompson in Chicago, Illinois, and the patent was issued the following year along with the start of production. This simple, rugged, but very attractive design has a demonstrated lasting power over the past 70 years. Since this is a very typical mid-20th Century device design, it has seen a resurgence in collectability over the past 20 years as demonstrated by André Sol's observations of 142 scales being offered on ebay over that time period! It is also interesting to note scale collectors all over the world have at least one of these in their collections.

Acknowledgments:

André Sol, ISASC Member, The Netherlands, ebay based data used with permission

Malcom Mathias, ISASC member, Australia

Reinhard Rix and Werner Widmer, Switzerland

Mary Anne Murphy and Kurt and Ann Beyreis, ISASC Museum Inventory for this EQM article

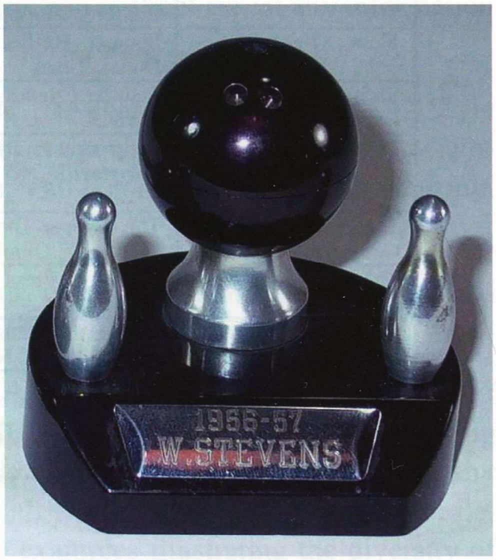


Figure 4. ➤➤ This scale was used as a bowling trophy and was issued to W. Stevens as an award for the 1956-1957 season.

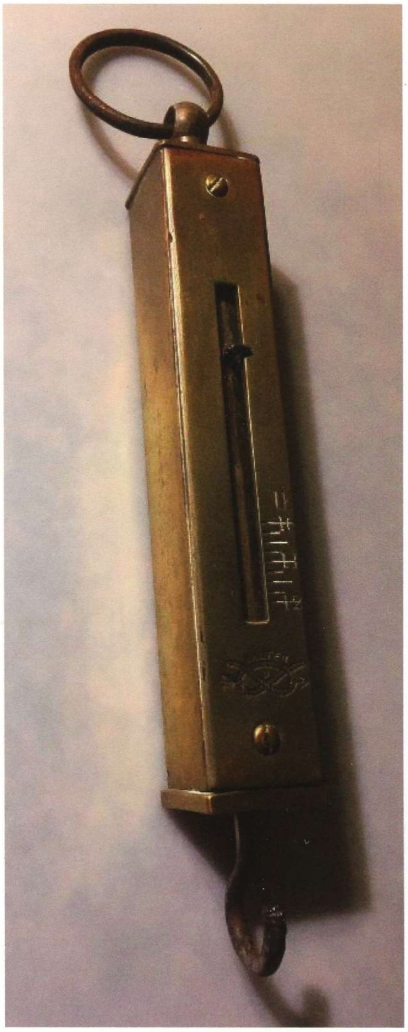
Notes & Queries

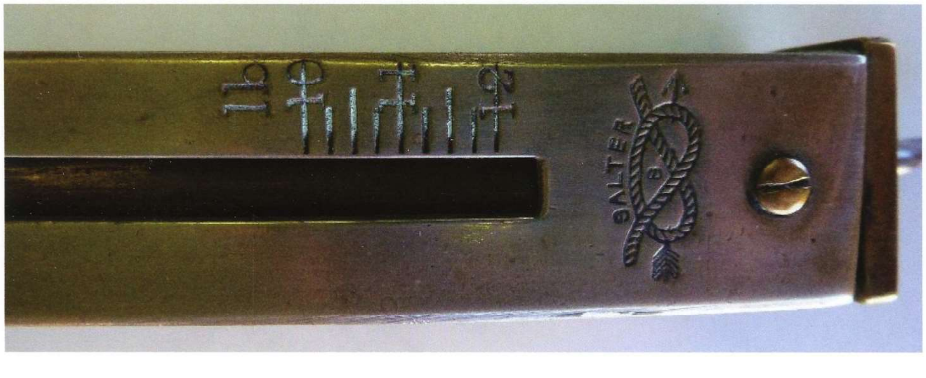
FROM ALBERTO BERTONI

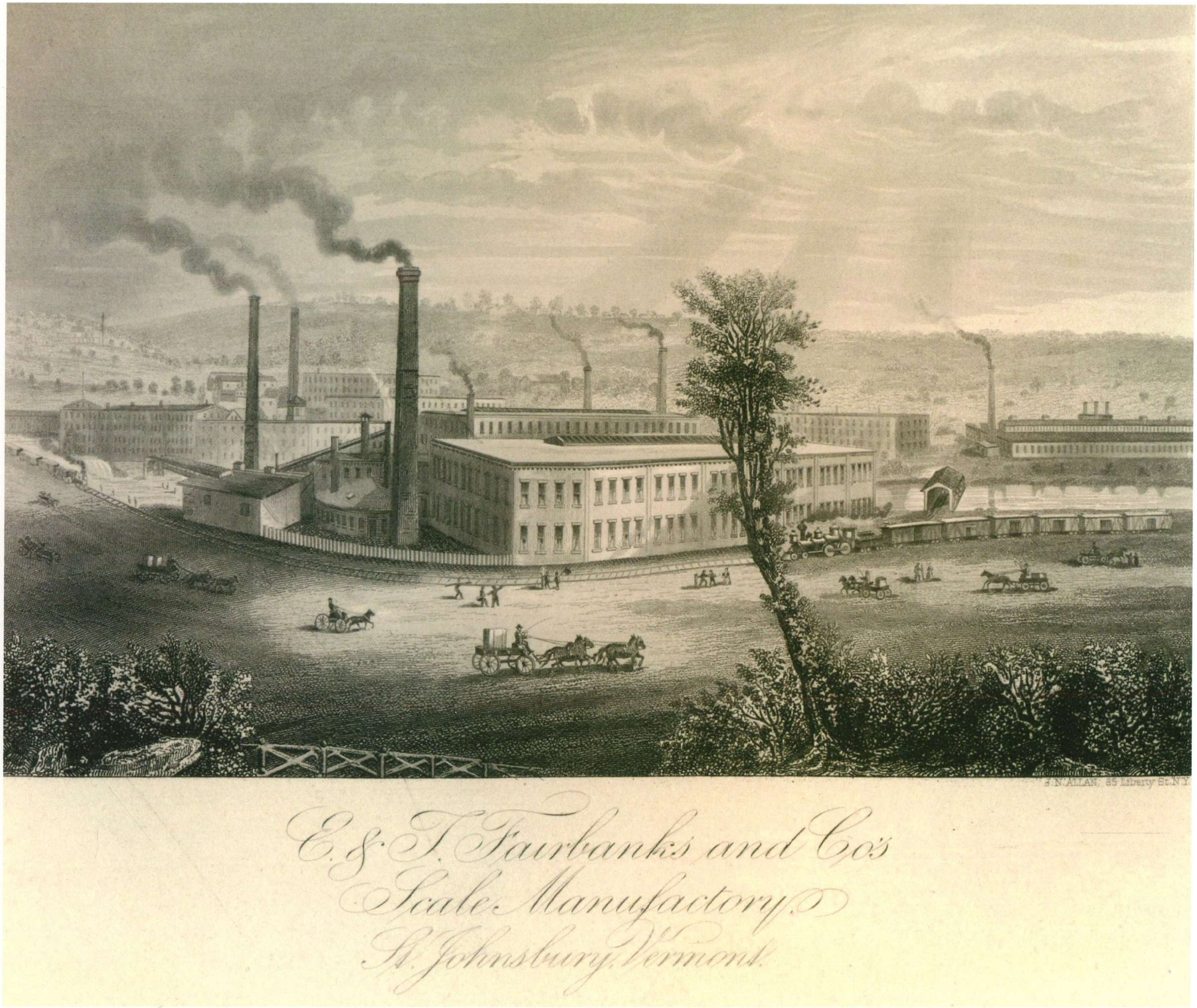
N & Q No. 162

I bought several spring scales at a UK auction and one of them, a Salter brand, amazed me because I have not seen it in any article about scales. Its section is square and it is graduated from 10 to 12 lb. It doesn't seem to be very old. Can you tell me something about it? I have created a group for collectors of scales (in Spanish) on Facebook: Coleccionistas de balanzas scales peson.

Can any member help Alberto?






J. N. ALLAN, 85 Liberty St. N.Y.
E. & T. Fairbanks and Co's
Scale Manufactory.
St. Johnsbury, Vermont.

Very old original engraving of the E & T Fairbanks Co's Scale Manufactory, St Johnsbury, Vermont

ISASC®

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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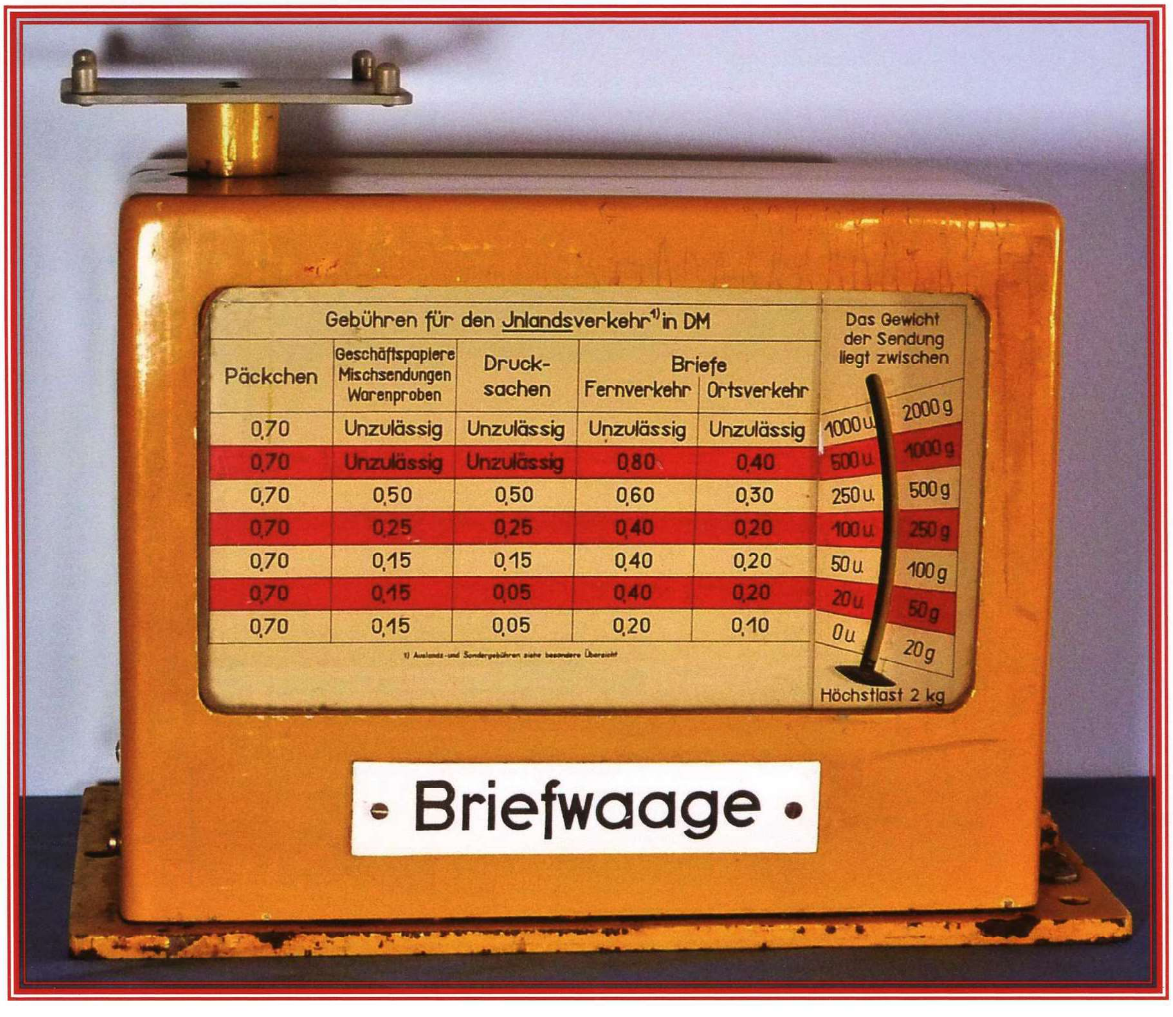

Cover Picture

This bright yellow German letter and parcel scale contains a weight lifting mechanism similar to a rolling pin scale. The quadrant chart is graduated from 20 grams to 2 kilograms. The scale is extremely heavy and measures 13” wide by 7” deep by 10½” tall with a letter plate measuring 4¼” square. It was manufactured by Oschatzer Waagenfabrik.

The company was founded on December 17, 1871, by Kopp and Haberland. Kopp & Haberland produced timing machines, decimal scales, weighing systems, livestock scales and vehicle scales. At its founding, it was one of the first companies in Oschatz. By 1905, the factory at Bahnhofstraße 37 in Oschatz had a total of 250 employees. Some of the early scales can now be seen in Oschatz' Waagenmuseum (Museum of Scales and Weighing Systems).

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

King's Commemorative Letter Balance

BY DIANA CRAWFORTH-HITCHINS

Betty Wright had in her collection a very rare postal scale by an unknown maker. See Figure 1. Fortunately, the designer of the scale, Simon King, wrote a letter to *The Mechanic's Magazine* on 20th January 1840,[1] giving his thoughts on it.

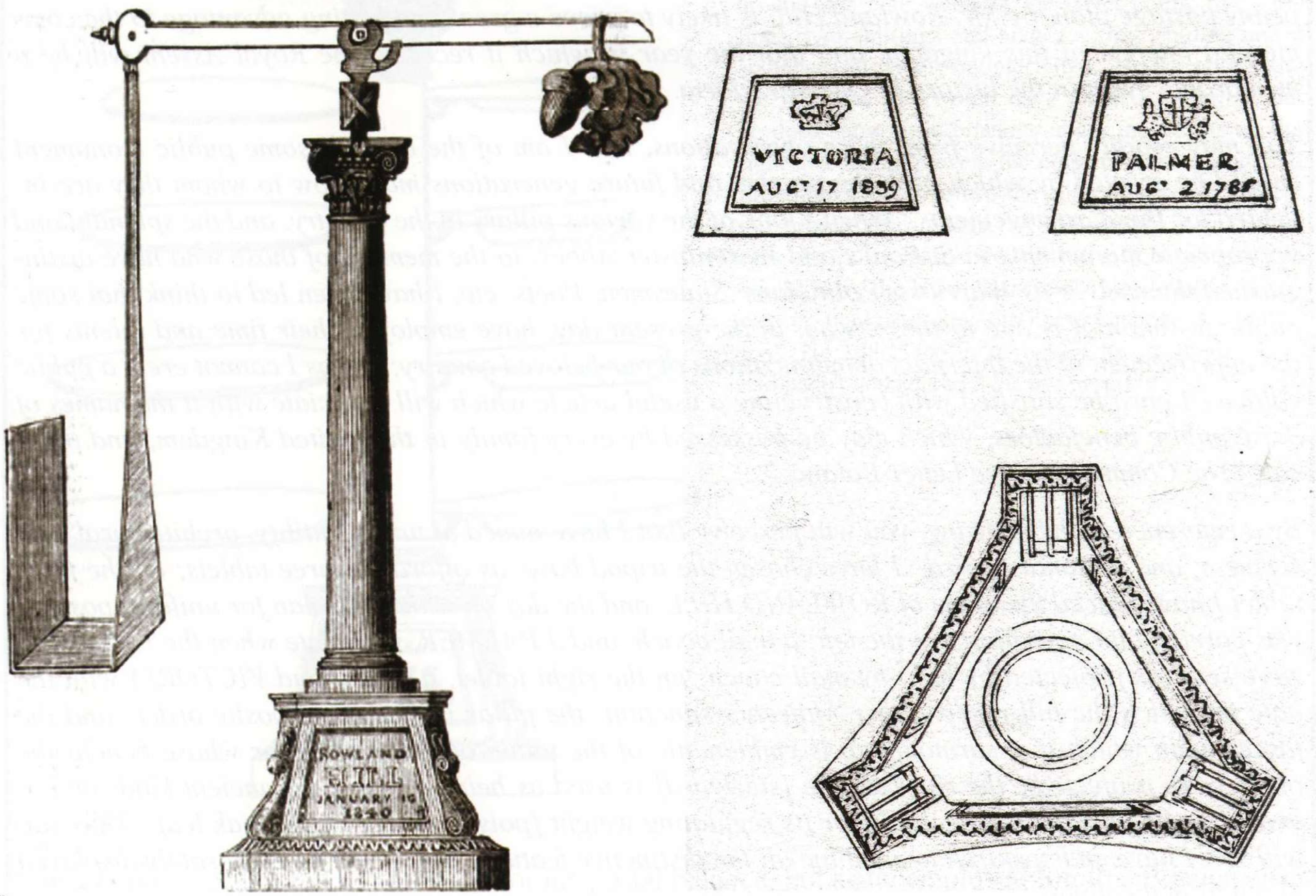


Figure 1. ⋀⋀ The pictures that Simon King provided for the *Mechanics' Magazine* were slightly different from those provided for the Design Registration officials a week later, but neither set showed the graduations on the steelyard!

To have the actual words of Simon King gives us an unusual insight into the reasons for his striking design. See Figure 2. King was an ironmonger, a trade that one might dismiss as a man who sold kettles and frying pans, but other documents make it clear that he was a manufacturer, and the letter shows that he was an educated and articulate man.

The new Post Office regulations have already engaged the attention and ability of many ingenious men, and as a result, a variety of machines for ascertaining the weight of letters previously to posting, are now before the public. It therefore seems necessary to assign a reason for introducing to your notice and that of the public, through the medium of your widely-circulated Magazine, another letter balance.

My object in designing the one now presented, was that there may be something in so necessary an article commemorative of the various improvements in the Post Office establishment. I consider that the improvements made for the more speedy and safe conveyance of letters by the mail coaches projected and carried into effect in 1784, by Mr. J Palmer, were a great national benefit, and the uniform penny postage plan, by Mr. Rowland Hill, is likely to prove a great and lasting advantage to the commercial interest of this kingdom, and that the year in which it received the Royal Assent will be a memorable event in the history of Queen Victoria.

You may readily perceive from these observations, that I am of the opinion some public monument should be erected by which both the present and future generations may know to whom they are indebted for these arrangements. When I look at the various pillars in the country, and the splendid and appropriate monuments in St Paul's and Westminster Abbey, to the memory of those who have distinguished themselves as Warriors, Politicians, Statesmen, Poets, etc, I have been led to think that some public testimonial is due to those, who, in the present day, have employed their time and talents for the improvement of the internal communications of our beloved country; but as I cannot erect a public edifice - I must be satisfied with constructing a useful article which will associate with it the names of these public benefactors, which may be possessed by every family in the United Kingdom, and this I call "The Commemorative Letter Balance".

By a reference to the drawing, you will perceive that I have aimed at uniting utility, architectural correctness, and national record. I have chosen the tripod base, as affording three tablets; on the front tablet I have placed the name of ROWLAND HILL, and the day on which his plan for uniform postage was carried into operation; on the left, a mail coach. and J PALMER, with date when the first letters were sent (as projected by him) by mail coach; on the right tablet, a crown and VICTORIA with the date on which the bill received her Majesty's sanction; the pillar is of the composite order; and the fasces, with which it is surmounted, is emblematic of the union of the people (for whose benefit the plans were projected); the rod balance [steelyard] is used as being of the most ancient kind; and to give it an English character, I add for its regulating weight [poise], an acorn and oak leaf. Thus you will see, I have endeavoured to combine all the distinctive features that might be elaborately displayed in a national column.

The mode of using this letter balance needs no instruction; I will only observe, that the pillar is suitable for every description of scale or balance, and may be made on a larger scale for public offices, to weigh from half an ounce to sixteen ounces.

In my design, I have confined myself principally to the pillar and base, which may be adopted with any description of balance applied to it; and I have shown one variation, which forms what I think is a very simple and complete plan of a letter weighing apparatus.

Hoping you will not consider I have been too explicit or tedious in the explanation of my design, and that you will consider it worthy [of] a place in your publication.

I remain, Sir, Your obedient servant, S King, Bath, Jan. 20, 1840.

Figure 2.

This letter was written a week before Simon King obtained his Design Registration, number 238, that give him three years' protection from copyists.[2] His application described the scale in the same way as in the letter above, but much more briefly, giving only essential details. The only additional point he made in his Design Registration was that John Palmer was the Member of Parliament for Bath [in 1801 -1802 and 1806-1807.]

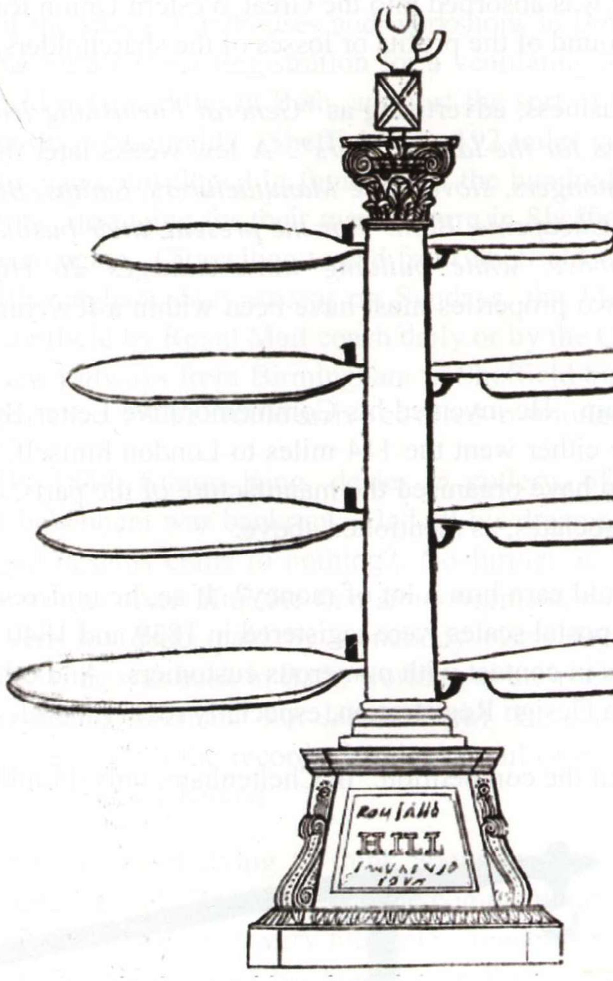


Figure 3. ≺≺ King called this "a letter weighing apparatus". It might have worked, as long as the coin platters faced forward, and the letter being weighed did not hit the largest platter. Other rockers on stands around this date were for the silver coins, five shillings, two shillings and sixpence, one shilling and a sixpence, all widely counterfeited. He does not show the fulcrums that would have pierced the pillar, but he does show little brackets under the beams on the right that would prevent the poise from dropping, and little hooks on the left of the pillar that would prevent the beams from rising. A full-weight coin would raise the poise, and slide off, but a light-weight coin would leave the beam horizontal. No check for diameter or thickness, so nothing to identify a counterfeit! He added the coin rockers as an afterthought, and hadn't considered their use properly.

Simon King does not refer to a maker for his postal balance, but as he employed Smiths, Braziers, Tinmen, Locksmiths, and Bellhangers, possibly he intended to manufacture them in his own workshops. Alternatively, ironmongers bought in directly from the manufacturers a lot of the items that they sold, so Simon would have known brass founders in the locality who could have made them for him if he did not do casting.

Before writing about the people Simon commemorated, it is interesting to consider some facts about his life. He was the second of eleven children, son of William and Sarah King, who were nonconformists. No evidence has appeared of his schooling, but given his standard of literacy, it was a good education. In 1825 he became a partner of Thomas Whitchurch, who presumably taught him how to be an ironmonger, but the partnership was dissolved in 1827, and Simon became the owner. (He was living in a clean town, recently expanded with lots of large Regency buildings, built to cater for the flocks of upper-class visitors, who came to "take the waters", gamble and socialise.[3])

Simon married into another ironmongery business in Bath. He married Sarah, the daughter of James Tuck senior, who must have trusted Simon, making him one of the Trustees to care for Sarah's little brother Joseph until Joseph was 25 years old.

The business must have prospered as in 1837 Simon bought £250 worth of shares in a very risky Railway gamble (the equivalent of £278,000 today). Isambard Kingdom Brunel was proposing to build a railway to Oxford, using his 7 foot-wide gauge lines, but the venture was absorbed into the Great Western Union Railway Company and was not built. No evidence has been found of the profits or losses of the shareholders.

In 1839 he took Sarah's mature brother James into his business, advertising as "*General Furnishing Ironmongers, stove grate manufacturer, smith, etc, in business for the last 14 years*". A few weeks later they advertised as "*King & Tuck, General & Furnishing Ironmongers, stove grate Manufacturers, Smiths, Braziers, Bell hangers, etc, 26 High St, (Market Place) & 4 Cheapside, Bath. For the present, their business will be carried on at the Two Establishments as above, while building work enlarges 26 High Street*". Cheapside ran directly into High Street, so the two properties must have been within a few yards of each other.

With James helping, maybe Simon had more time to dream. He invented his Commemorative Letter Balance, and wrote to the *Mechanics Magazine* about it. He either went the 114 miles to London himself, or asked somebody else to register his Design. He must then have organised the manufacture of the parts, either within their own workshops, or by one of his trade associates, as mentioned above.

Had he thought that his Commemorative Postal Scale would earn him a lot of money? If so, he underestimated the competition. Seventeen interesting designs for postal scales were registered in 1839 and 1840 in the five months before his, some by established companies in contact with numerous customers. And other designs were being made without their makers taking out a Design Registration, especially roberval scales.

1840 was not the best year to introduce a new design, given the competition. In Cheltenham, only 44 miles north of Bath, Henry Leonard was advertising that he sold postal scales by Winfield and Mordan, the two most prolific and successful makers of postal scales. Both Bath and Cheltenham were holiday destinations for the upper classes, full of shops selling non-essential delights, and Simon might have thought that his unusual, eye-catching scale would sell very well in Bath.

Given the competition, maybe we should not be surprised that only one example is known, and that one has lost its letter hanger and its oak-leaf and acorn poise. See Figure 4.

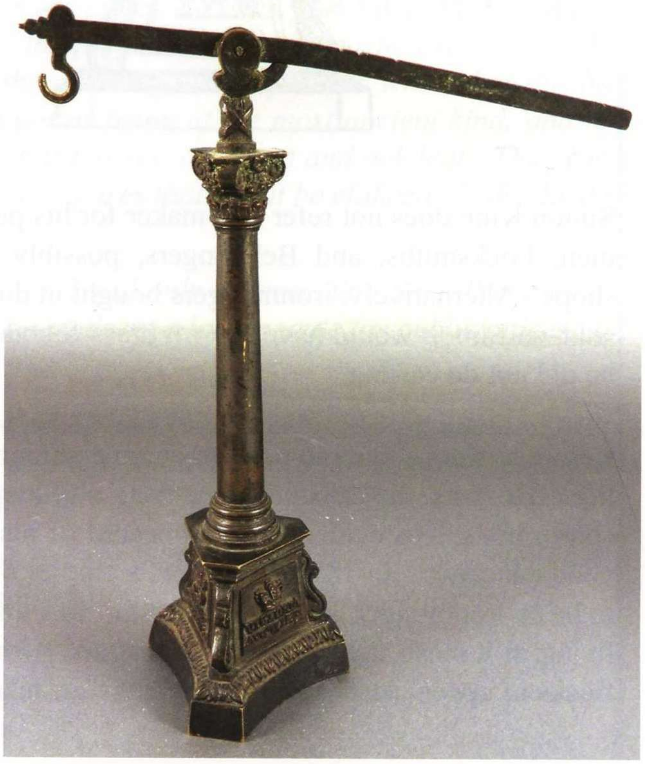


Figure 4. ➤➤ Why did King not put a stop at the end of the steelyard to prevent the poise from sliding off? He had the sense to add a little bracket to prevent the steelyard from tipping down on the right. King thought that his pillar and base would be useful supporting other kinds of scales. Was the same pillar and base used for an equal-arm postal scale? It would have worked well.

In 1841, dreamy, artistic Simon got three Design Registrations, not for scales, but for a chimney pot and a stove. He gave his address as "Bath and Cheltenham". The 1841 census records him, his wife and his two daughters living at 4 Bathwick Terrace, Bath. No record has been found of a specific address in Cheltenham until 1846, when he is recorded at Henry Leonard's address, 395, High Street.

In 1844, Simon and his brother-in-law dissolved the partnership, leaving James Tuck in sole possession of the shops, warehouses and workshops in Bath. In 1845, Simon gave his address as Sheffield when he got a Design Registration for a ventilating and smoke consuming stove grate, just the sort of thing he'd been making in Bath, and just the sort of thing made in Sheffield. So was he intending to move north to Sheffield? (Sheffield was 192 miles north-north-east of Bath, in a much colder, wetter part of England, enveloped in fumes from the hundreds of iron and steel factories.) Was he there for a short time, arranging for their manufacture in Sheffield? Yet, by 1846 he was back down south in Cheltenham again. (Travelling to and from Sheffield was not difficult as Royal Mail coaches ran from Bath to Birmingham daily except on Sundays, the Mercury Fast coach similarly, and from Birmingham to Sheffield by Royal Mail coach daily or by the Quicksilver Fast coach daily. He could have gone on the new railways from Birmingham to Sheffield but with several changes. Perhaps he did, just for the experience, but he would arrive covered in smudges of soot!)

By 1849, Simon King, dealer in cutlery, of Cheltenham was bankrupt. Had all his dreams and designs come to nothing? No further action was taken after the first announcement, so were his debts paid by somebody else? By 1851, he was back in Bath, working as an ironmonger's foreman. For James Tuck? He disappears from the records, leaving a trail of erratic enigmas behind.

It is more satisfying to think about the constructive and effective people he commemorated. His idea was a very nice one - remembering John Palmer of his home town Bath, and Rowland Hill originally coming from Birmingham. See Figure 3.

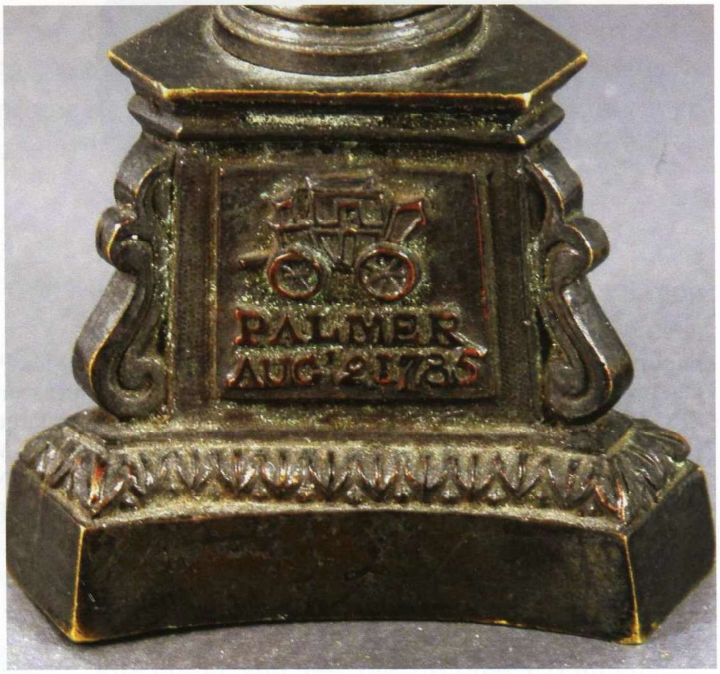


Figure 5. ⮝⮝ A mail coach heads this tablet, of the later design used by Palmer on all his routes. They had metal springs that reduced the discomfort of prolonged journeys for the passengers who took up most of the space in each coach. The quality of the lettering is abysmal, suggesting that the mould-maker had never been required to cast letters before.

John Palmer was honoured in Bath, having extended his coach service, initially intended to transport his theatrical equipment and actors between London and Bath. In the 1770s and early 1780s, he had become so frustrated with his actors being on the road for three days in a coach with leather straps for springs (that made the passengers sea-sick), he had started his own coach service that reduced the journey to one day. His success led to his creating 42 routes going all over the country, a means of travel that Simon King used years later.

It was illegal to carry letters or packets for anybody else on a coach, but Palmer thought it would be a great improvement if an official bag of letters could be carried on his coaches. It took him years to convince the authorities that it was a good idea. (The authorities had always had the right to open any letter, although they did not admit that they were censoring people's correspondence to restrain the Government's opponents, but it meant that they needed every letter to go through the Post Office, and not be tucked into a traveller's pocket.)

After a successful experiment, Palmer's coaches got a contract to convey letters and, to speed things up, had a man with a coach-horn on board, blowing his horn to warn the toll-bar keepers to open their gates and let them dash through. It was dramatic and effective. Letters still cost a lot of money to post, and were still charged on how many miles the letter was to travel, but they went quickly and relatively safely. The huge increase in the use of the Post Office was evidence that people wanted to write letters. See Figure 5.

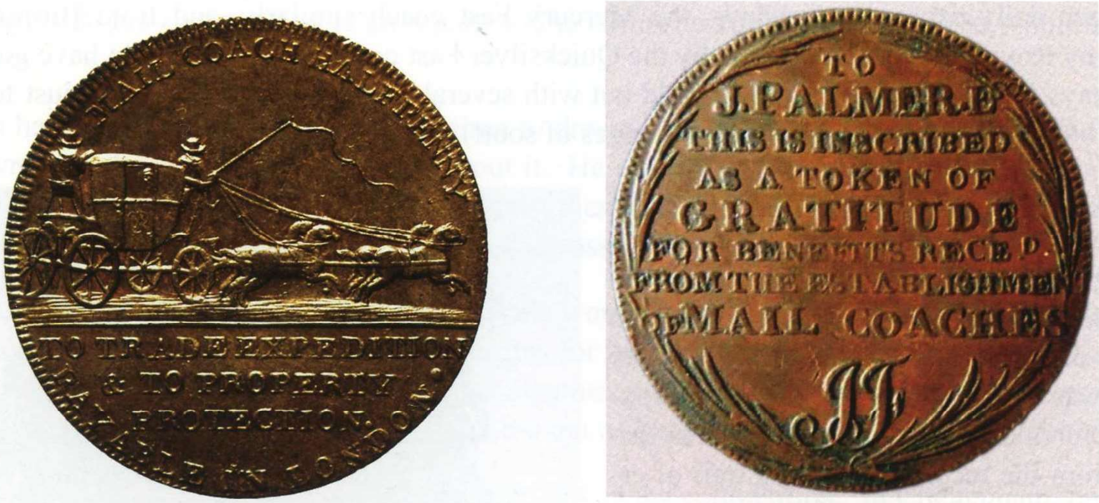
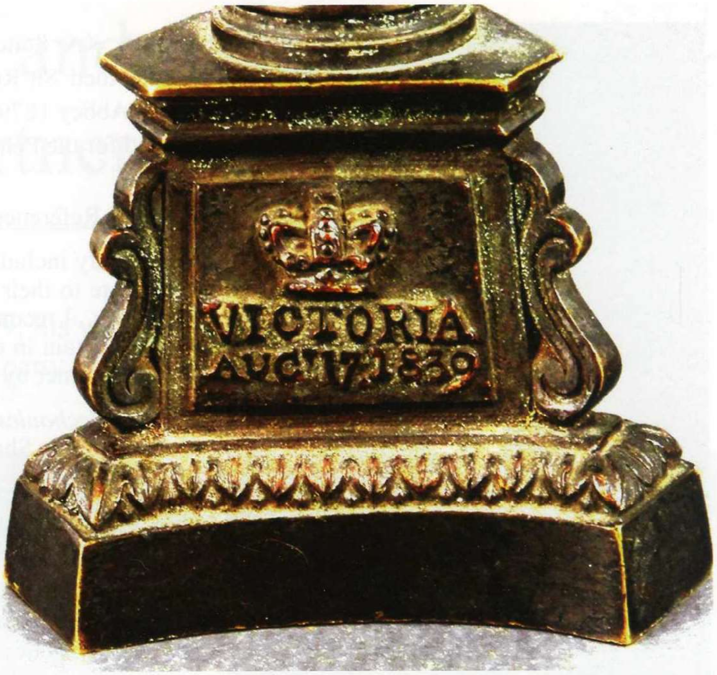


Figure 6 a & b. ▲▲ The respect that Palmer gained from his Postal Service was shown graphically on a half-penny token that people could use as ordinary coinage. Figure 6a has the words "TO TRADE EXPEDITION [speed & efficiency] & TO PROPERTY PROTECTION". The highwaymen no longer targeted the mail so frequently, so people could send valuables confidently. The reverse in Figure 6b has the words "TO J PALMER Esq. THIS IS INSCRIBED AS A TOKEN OF GRATITUDE FOR BENEFITS REC'd FROM THE ESTABLISHMENT OF MAIL COACHES, JF". Minted in 1797. We don't know for sure who JF was, but he must have been one of the people who benefited greatly from the improved service.

King commemorated Palmer's start on August 2nd, 1785 of a mail coach, and on the second tablet he commemorated the Act of Parliament passed on August 17th, 1839 (see Figure 7) that gave the Post Office *permission* to reduce the cost of a letter to one penny for a letter up to ½oz in weight (regardless of how many sheets of paper it included or how far it had to travel), and got rid of the iniquitous franking of letters[4] that allowed them to go free of charge, that had been so prevalent until 1839, and had forced the Post Office to charge heavily for non-franked letters to cover the cost of all the franked letters. Temporarily the rate of four pennies for a ½oz letter going any distance had the astonishing effect of increasing the number of letters by 120%. (This four-penny charge was only in use from 5th December 1839 until 9th January 1840.)

Figure 7. ➤➤ The crown gives an authoritative look to this tablet. It looks odd to say "Victoria" without saying "Queen", but this was because every Act of Parliament was labelled thus: Firstly the number of years the monarch had been on the throne. Secondly, the name of the monarch, then thirdly the chapter or volume where it was recorded. So this Act was 2 Victoria c.52. Each tablet had the features high-lighted in red varnish, but most of the varnish has worn off.



King's third tablet commemorated Rowland Hill who had pushed so hard for a cheap, swift, incorruptible system of Postage. See Figure 8. Hill had met with huge resistance from the Postmaster, Lord Litchfield, who denounced the scheme as *wild and Visionary*, and from the Secretary to the Post Office, W L Mabberly who said of Hill's plans, "*This plan appears to be a preposterous one, utterly unsupported by facts and resting entirely on assumptions*." The support of bankers, traders and merchants, however, helped Hill to succeed in guiding the Act of Parliament through, but it was only on the 10th January, 1840 that Hill's plans came to fruition, and the postage rate was finally reduced. The resulting huge increase in the writing of letters must have amazed Hill even though he'd estimated and always believed that it would be popular.

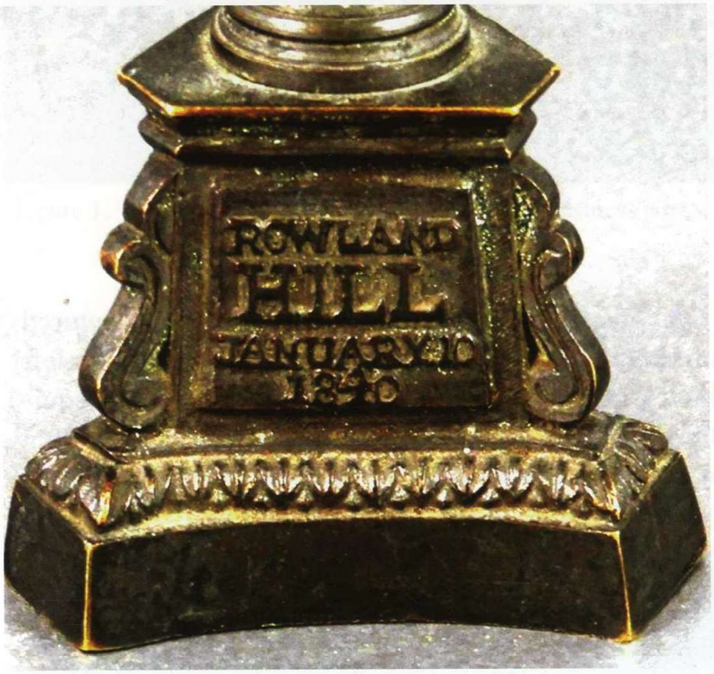


Figure 8. ▲▲ It is difficult to read, but says "ROWLAND HILL, JANUARY 10, 1840". This tablet was designed before stamps were in production, so all letters still had to be taken to a Post Office so that either the person posting it could pay, or the letter marked so that the recipient could pay the postman who delivered it.

The newspapers had been publishing the forthcoming changes for some months, so Simon King had plenty of time to think up his ideas for a Commemorative Postal Scale, get it registered and put it into production. Simon wanted a statue erected; so go to Kidderminster in Worcestershire, look at Rowland Hill's statue erected 40 years after Simon suggested it, and think of the dreamer, Simon King!

But even better, go to the ISASC museum in Pittsburgh and see the original Commemorative Letter Balance.

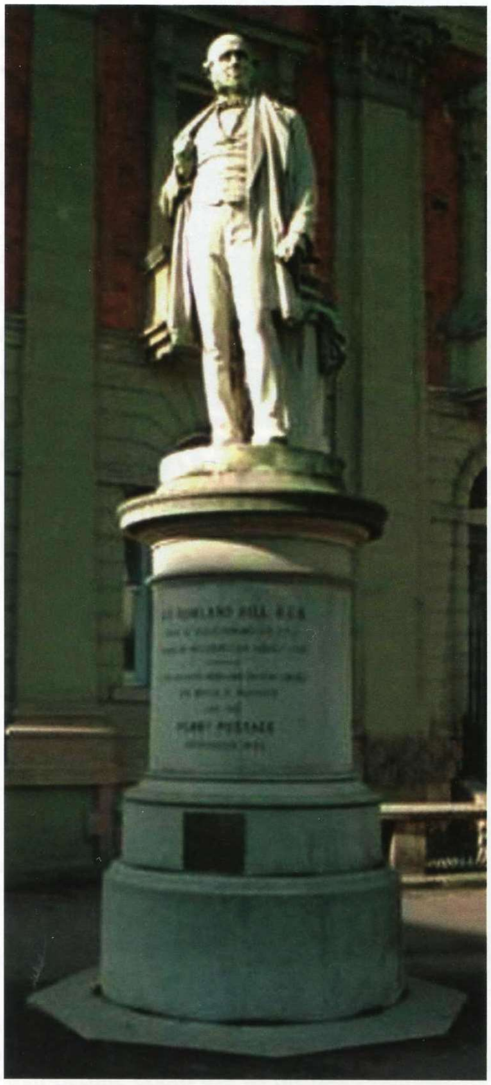


Figure 9. << Statue of Sir Rowland Hill made c1880, by Sir Thomas Brock. It is inscribed 'Sir Rowland Hill, Born at Kidderminster 1795, buried in Westminster Abbey 1879' and 'To his creative mind and patient energy the world is indebted for the Penny Postage introduced in 1840.'

Notes & References

I have only included abbreviated facts about John Palmer and Rowland Hill that relate to their postal activities, but both lived full lives of great benefit to society. I recommend a search on-line to learn more about two men who altered Britain in extraordinary ways. There is a particularly good painting of John Palmer by Thomas Gainsborough.

1. *The Mechanics' Magazine & Journal of Science, Arts & Manufactures*, Volume 32, by Sholto Percy.

2. Design Registration gave protection of a visual design, not of a mechanism or intellectual idea. As Simon King only got Design Registrations, he was not an original thinker, he was a designer, to use modern terminology.

3. An excellent way of learning about Bath is to read Jane Austen's book *Northanger Abbey*, or one of Georgette Heyer's many light-hearted books about the Regency period.

4. Franking was a privilege granted to Members of Parliament; peers, archbishops and bishops sitting in the House of Lords; and to important office-holders. About 5 million letters were sent free annually. It was common for Members of Parliament to give out signed blank sheets of paper to friends and business associates on which they could write letters and mail them at no cost. Members of Parliament were even appointed to the boards of large companies in order that their mailings could make use of the free franking privilege.

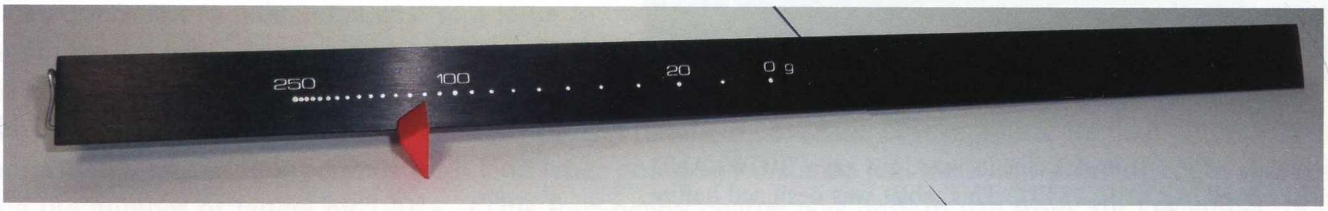
Acknowledgements

The scale was donated to the ISASC Museum by the Frank and Betty Wright Foundation, along with numerous other exciting scales.

I had a lot of help from Mary Anne Murphy, Gregg Motter and Andrew Crawforth. I thank them very much.

Showcase

This simple rocker letter scale was designed by Claus Langhoff and Nis Øllgaard and manufactured by PP Line in Denmark. The beam consists of a triangular aluminum bar with a letter clip on the left end. A red plastic indicator acts as a fulcrum which slides along the bottom of the bismar until equilibrium is reached. The bar is graduated in white from 0 to 250 grams and measures 11¾" long.



Chauncey Duryee and Orrin Forsyth - Scale Makers & Partners, Part 2

BY GREGG MOTTER

Upon Chauncey Duryee's death in 1856, at age 39, his weighing machine and counter-top scale business interests passed into the hands of Forsyth & Company with the two principle owners being Orrin A. Forsyth and John H. Truex.

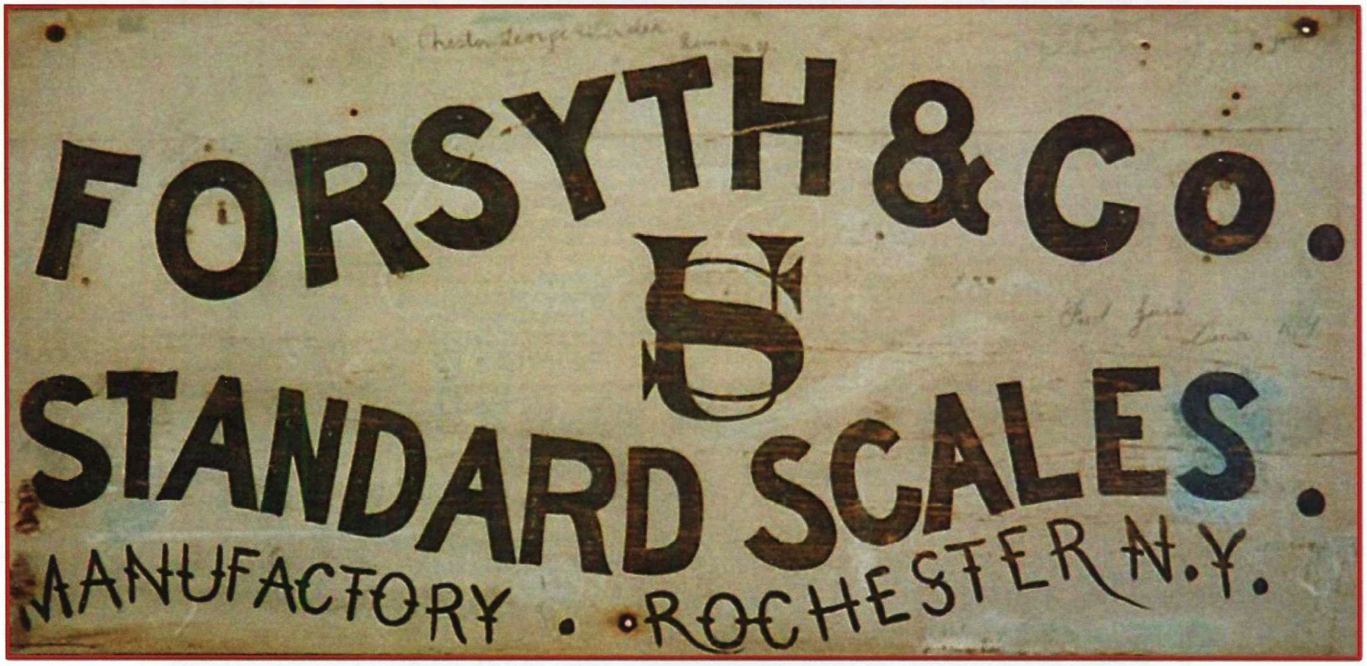


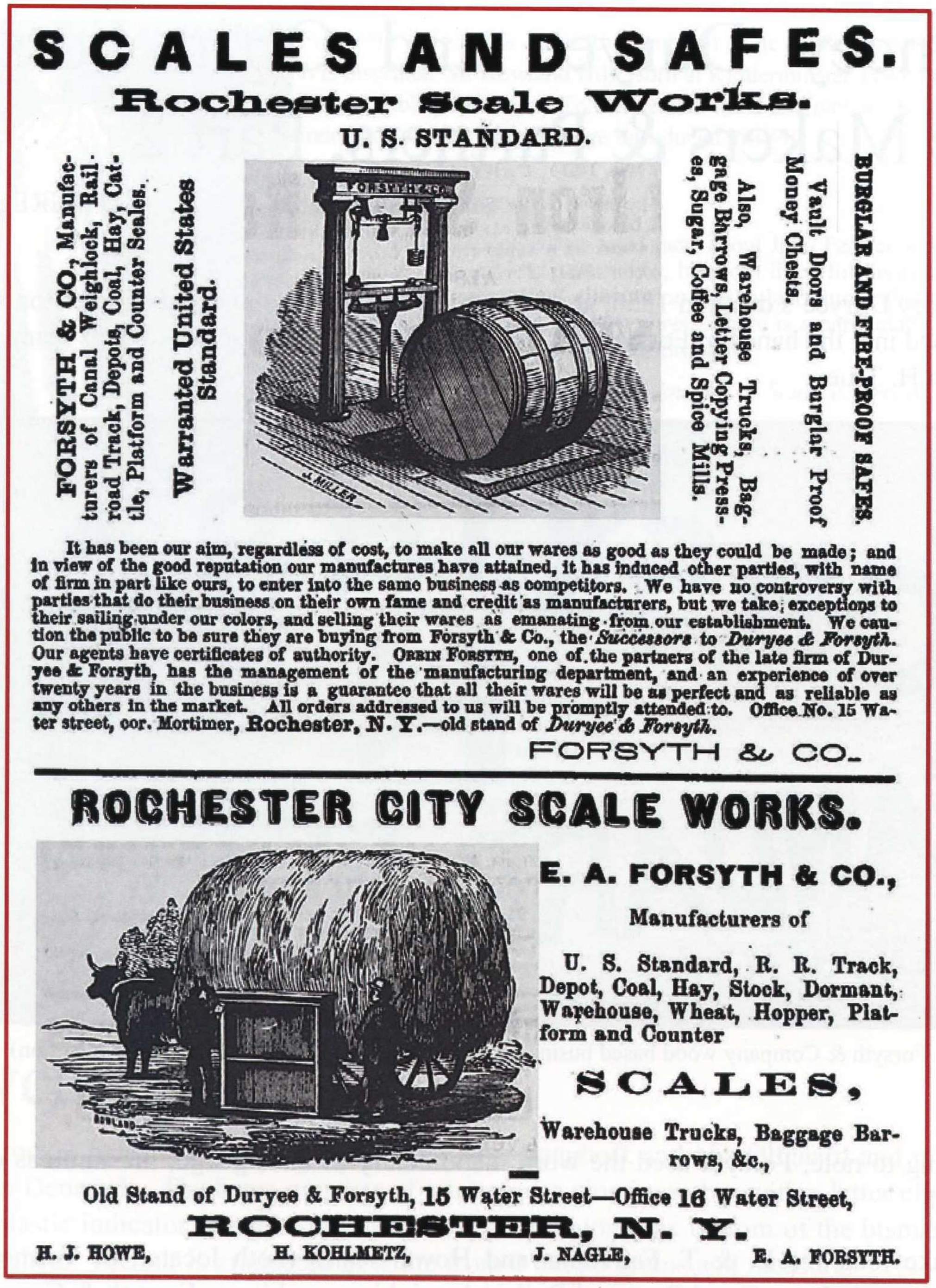
Figure 1. ▲▲ Forsyth & Company wood based business sign, circa 1856. (Bill & Jan Berning Collection)

It is interesting to note, Forsyth used the word manufactory in his signage; the same as did Chauncey Duryee.

It did not take long for E. & T. Fairbanks and Howe Scales (both located in Vermont) to pursue Duryee's business in large Canal Boat and Railroad weighing machines. Forsyth & Company responded to this competitive threat directly in their advertising where they:

1. Linked their business as a continuation of the old Duryee & Forsyth enterprise by stating they were located at the *Old Stand of Duryee & Forsyth* in Rochester, N.Y.
2. Continued the collaboration with Rochester Scale Works to do their foundry work.
3. Specifically named the principle owners of each business illustrating twenty plus years of weighing machine and counter-top scale making expertise.

Refer to figure 2 for two examples of Forsyth & Co. advertising from this period of time.


FORSYTH & CO.
J. MILLER

SCALES AND SAFES.

Rochester Scale Works.

U. S. STANDARD.

FORSYTH & CO., Manufacturers of Canal Weighlock, Railroad Track, Depots, Coal, Hay, Cattle, Platform and Counter Scales.

Warranted United States Standard.

BURGLAR AND FIRE-PROOF SAFES.

Vault Doors and Burglar Proof Money Chests.

Also, Warehouse Trucks, Baggage Barrows, Letter Copying Presses, Sugar, Coffee and Spice Mills.

It has been our aim, regardless of cost, to make all our wares as good as they could be made; and in view of the good reputation our manufactures have attained, it has induced other parties, with name of firm in part like ours, to enter into the same business as competitors. We have no controversy with parties that do their business on their own fame and credit as manufacturers, but we take exceptions to their sailing under our colors, and selling their wares as emanating from our establishment. We caution the public to be sure they are buying from Forsyth & Co., the *Successors* to *Duryee & Forsyth.* Our agents have certificates of authority. ORRIN FORSYTH, one of the partners of the late firm of Duryee & Forsyth, has the management of the manufacturing department, and an experience of over twenty years in the business is a guarantee that all their wares will be as perfect and as reliable as any others in the market. All orders addressed to us will be promptly attended to. Office No. 15 Water street, cor. Mortimer, Rochester, N. Y.—old stand of *Duryee & Forsyth.*

FORSYTH & CO.

ROCHESTER CITY SCALE WORKS.

E. A. FORSYTH & CO.,

Manufacturers of

U. S. Standard, R. R. Track, Depot, Coal, Hay, Stock, Dormant, Warehouse, Wheat, Hopper, Platform and Counter

SCALES,

Warehouse Trucks, Baggage Barrows, &c.,

Old Stand of Duryee & Forsyth, 15 Water Street—Office 16 Water Street,

ROCHESTER, N. Y.

H. J. HOWE, H. KOHLMETZ, J. NAGLE, E. A. FORSYTH.

Figure 2. ⋀⋀ 1856 Advert for Rochester Scale Works, Forsyth & Company, and Rochester City Scale Works linking the new Forsyth & Company with well-known experienced scale company proprietors of the past. Note: E. A. Forsyth is Edward A. Forsyth, who will re-emerge in a major way later in this story!

It is interesting to observe in Figure 3 from Moore's 1862 *Rural New-Yorker*, and catalogs from this era, Forsyth & Company continued offering all of the very large complex machines from the Duryee days for weighing: canal boats, railroad track scales (freight cars), railroad suspension track scales (live-stock cars), suspension stock (hay or coal scales), along with hay, stock and coal dealer scales as well as railroad locomotive turn-tables.

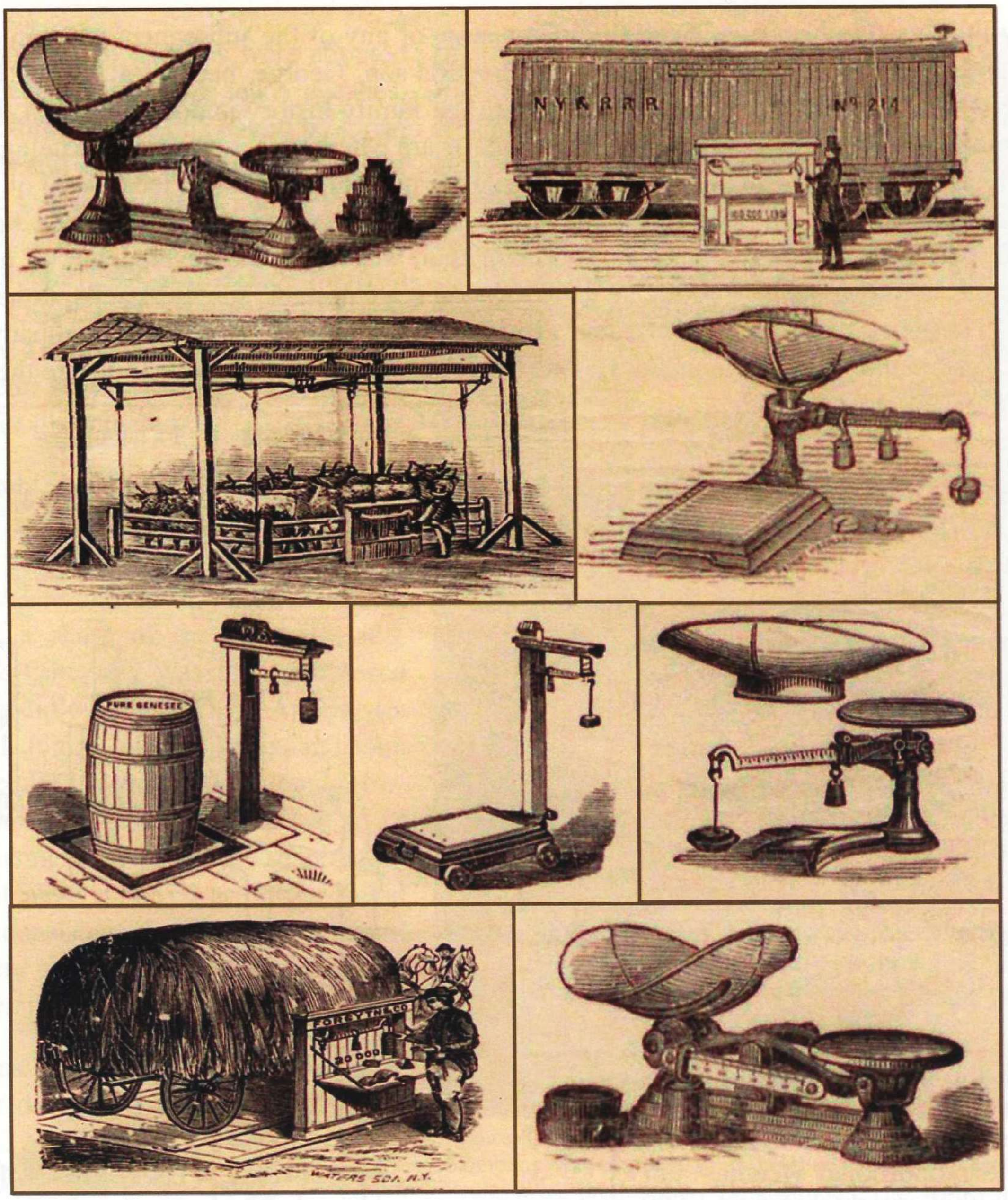


Figure 3. ▲▲ Summary of Forsyth & Company's products from Moore's *Rural New-Yorker*, March 29, 1862.

Forsyth was the driving force to add small counter-top scales to the product offering in the partnership with Duryee and expanded even more in Forsyth & Company. Figure 4 shows one such example.

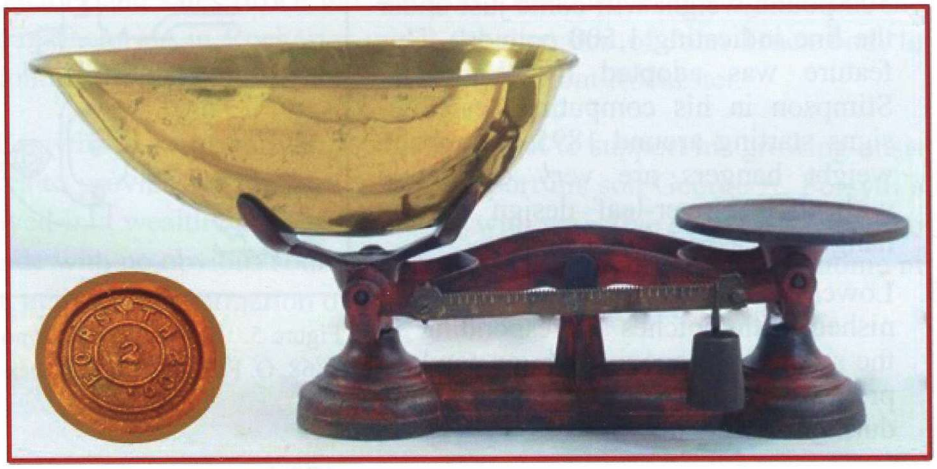


Figure 4. ➤➤ Example of Forsyth & Company Even Balance Scale and 2-Pound Weight. (Gregg and Amy Motter Collection)

There is very little written history of Forsyth & Company, or any of the subsequent companies where Forsyth had an ownership position. Fortunately, Forsyth's son, George, became a famous Brigadier General under General Ulysses S. Grant, and therefore the family history is documented in those war texts. The primary sources of information on the company are patents, a few surviving catalogs (or just pages of catalogs in some cases), and trade cards stating the owners' names and location(s) of the business. The period 1867 to 1891 was one of tremendous innovation and creativity within Forsyth & Company and their scale company partners. The innovation was not in the development of new scale designs, but rather improvements to components of existing scale designs, support stands, esthetics, and beam design. These two decades witnessed four significant U.S. patents issued to the company worthy of note here. (The author is suspicious there were more patents, but was not able to locate them in the preparation of this article.)

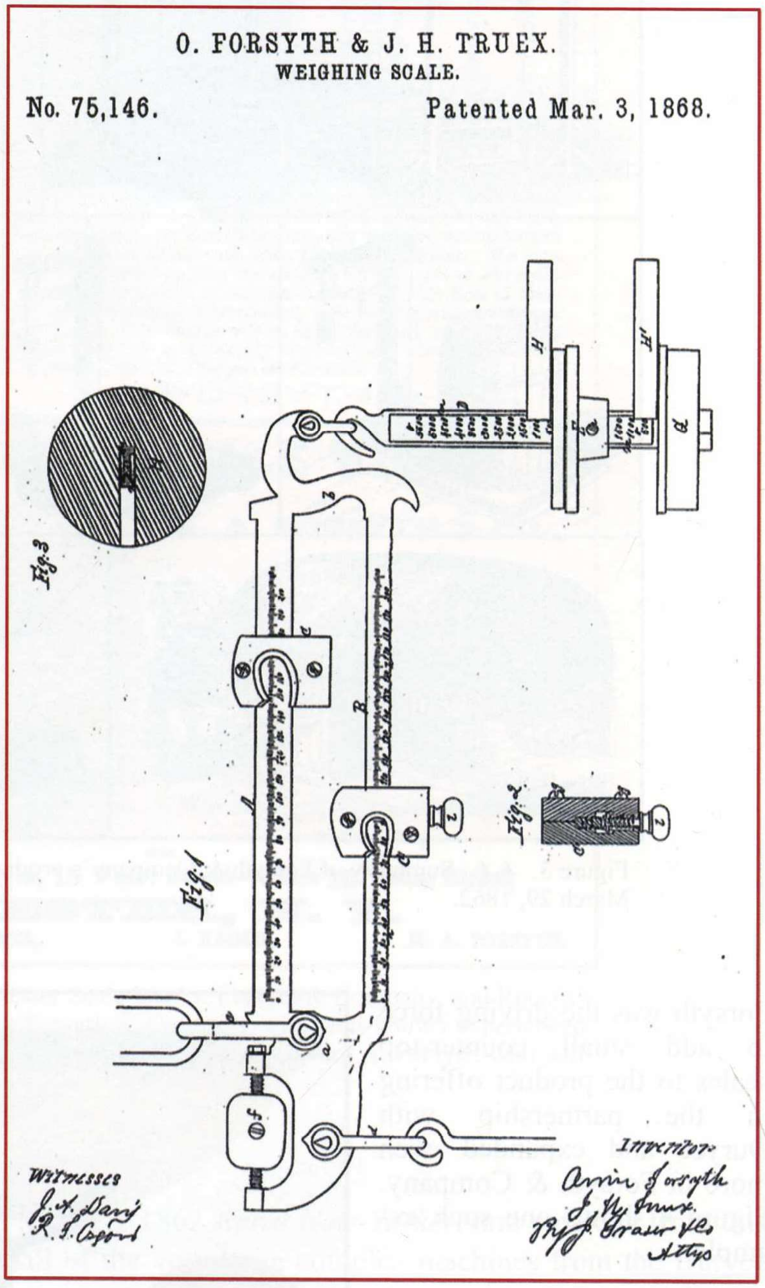


Figure 5. ▲▲ U.S. Patent no. 75,146, 'Weighing Scale', March 3, 1868, O. Forsyth & J. H. Truex

There is a lot more going on in U.S. Patent number 75,146 than is indicated in the patent drawing. This patent was a major change in the design of scale beams in many ways:

1. A combination beam fabricated in one piece; as opposed to the traditional construction of multiple pieces screwed together.
2. The pendulum rod was designed to have double proportional weight-supports to allow tare and net weight to be separately indicated.
3. Poise weights became fabricated in two halves and screwed together to attach them to the beam.
4. Pendulum rod was provided with a vertical scale for indicating heavy loads. The distance between the lines on the vertical scale corresponded to the thickness of the proportional weight. For example, a thin weight balancing 500 pounds will come just under the line on the scale indicating 500, and weight balancing 1,000 pounds on top of the 500 pound weight will come just under the line indicating 1,500 pounds. This feature was adopted by Walter F. Stimpson in his computing scale designs starting around 1895. Stimpson weight hangers are very distinctive with their clover-leaf design on the hanger and associated weights.
5. Lower side of the tare beam was furnished with notches corresponding to the scale to engage a catch, or pawl, to prevent the tare poise from slipping during the weighing process.

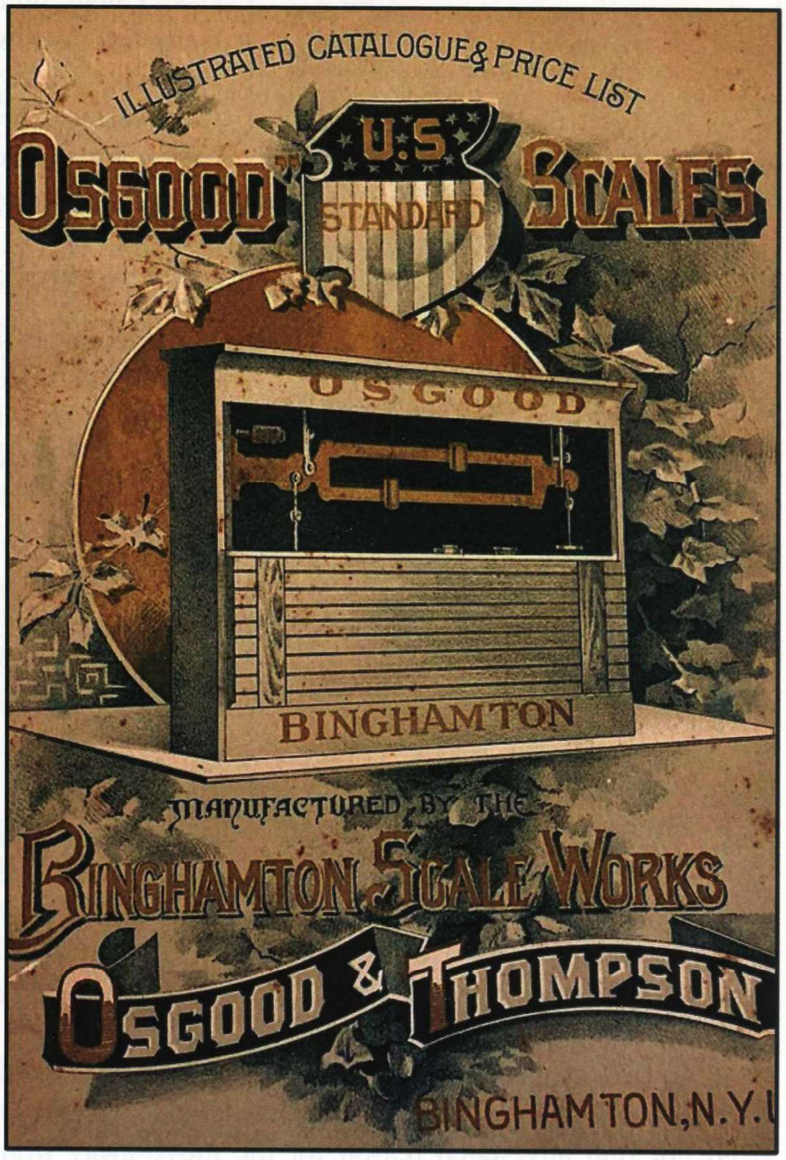


Figure 6. ▲▲ Cover of Osgood & Thompson 1892 Scale Catalog. Company was established in 1869 per statement inside this catalog. Scales were produced by Binghamton Scale Works in Binghamton, N.Y.

These beam design changes were adopted by many scale makers over many decades. It is interesting to note this patent by Orrin A. Forsyth and John H. Truex, owners of Forsyth & Company, was witnessed by R. F. Osgood! By 1869, Osgood had left Forsyth & Company, and was in a partnership operating Osgood & Thompson in Binghamton, N.Y. some 160 miles from Rochester. Refer to the witness signatures in Figure 5 for his signature.

At this point, it is important to note John H. Truex sold his interest in Forsyth & Company in 1868 to Willard Abbott. A short time later, in 1873, John Truex repurchased a share of the company and, Forsyth & Company was then composed of four principle owners: Orrin A. Forsyth, William H. Jones, John H. Truex, and John Nagle. See End Notes for additional information on these gentlemen. This is all very confusing at best, and the scant documents that have survived are often found to be inconsistent in specifying dates where there was a change in the company's ownership.

For reasons that are unknown for certain, dissention developed among some of the important stockholders concerning the company's operations and finances. (There is some speculation in the literature of Forsyth's embezzlement from the company.) To escape the bickering, Orrin Forsyth decided to divorce himself from the Rochester, N.Y. operations and establish a small factory and sales office in Chicago. Contained in that agreement, the parent firm would continue its manufacturing in Rochester under the direction of John Truex both to support Forsyth in Chicago, and continue to grow the established business from Rochester.

It is important to note that Orrin Forsyth was constantly in search of capital to support his growing business operations, financial resources to provide for his family, and support his son George A. Forsyth's life style. Orrin and his family lived in a wealthy area of Rochester with an active social life. George Forsyth went for more than a decade with no obvious source of income after leaving the family home in Rochester. Refer to End Notes for additional information on the colorful life of George Forsyth.

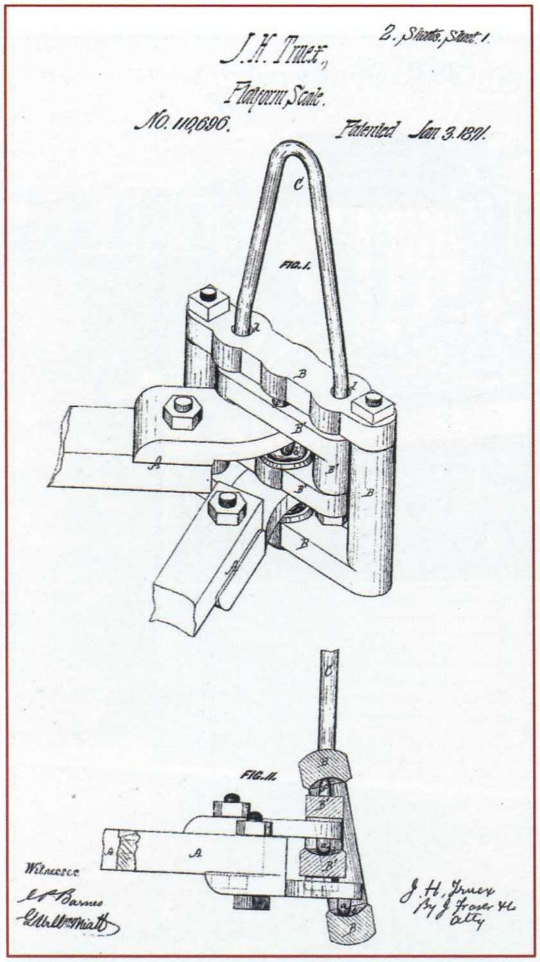


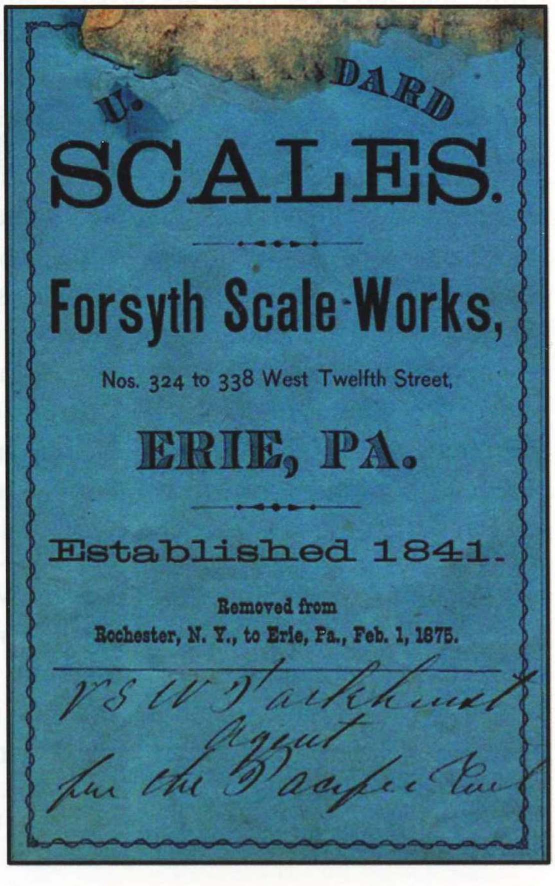
Figure 7. ⮝⮝ U.S. Patent 110,696, Platform Scale by J. H. Truex.

U.S. Patent number 110,696 clearly illustrates Forsyth & Company was watching, and reverse engineering, E. & T. Fairbanks scales very closely. This patent pertains to platform scales recessed into the ground, or floor, to facilitate rolling a loaded cart onto the scale. The patent document begins by stating *This invention is similar in principle to the patent of Thaddeus Fairbanks, December 20, 1859, but embodies an improved construction and arrangement of the parts...*

In particular, this patent deals with construction details of arranging two scale stirrups, one inside the other, such that they are loosely attached to one another but yet contained such that they do not accidently become detached. This type of scale was the bread-and-butter of E. & T. Fairbanks' offerings, and John Truex with this patent achieved a major competitive advantage for the next 14 years! It is also interesting to note R. F. Osgood, again, witnessed the patent even though he was operating Osgood Scales in Binghamton, N.Y. at the time per witness signatures in Figure 7.

On February 1, 1875, Forsyth & Company moved out of Rochester, N.Y. to Erie, Pennsylvania, and at the same time changed the company name to Forsyth Scale Works. The new location was 324 to 338 West 12th Street. This is a huge tract of land upon which they erected a very large manufacturing facility. To support his investment, business must have been very good. In conducting the research for this article, I did not find any stated reason for the move away from Rochester, N.Y. Refer to Figure 8 for a copy of the new catalog cover, and page 2 of this catalog illustrating the very broad product offing for Forsyth Scale Works at this point in time.

The new Erie, PA facility was still standing in 1900, and was renovated to become Ordin Stove Manufacturing, another foundry type of business. Today, it is an empty tract of land in an industrial area of the city along-side a major highway.



U. DARD

SCALES.

Forsyth Scale-Works,

Nos. 324 to 338 West Twelfth Street,

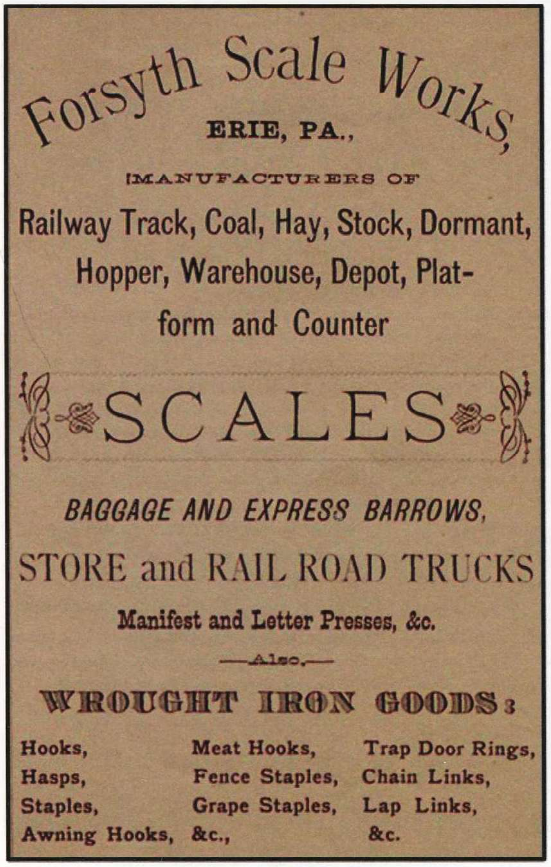
ERIE, PA.

Established 1841.

Removed from
Rochester, N. Y., to Erie, Pa., Feb. 1, 1875.

V S W Parkhurst
Agent
for the Pacific Coa

Figure 8A. ⮞⮞ Cover of Forsyth Scale Works Catalog dated 1875 after relocating from Rochester, N.Y. to Erie, PA. It is interesting to note Forsyth used the establishment date of Duryee Manufacturer in 1841 as the establishment of his company that actually began in 1856! (Gregg and Amy Motter Collection)



Forsyth Scale Works,

ERIE, PA.,

MANUFACTURERS OF

Railway Track, Coal, Hay, Stock, Dormant, Hopper, Warehouse, Depot, Platform and Counter

SCALES

BAGGAGE AND EXPRESS BARROWS,

STORE and RAIL ROAD TRUCKS

Manifest and Letter Presses, &c.

—Also.—

WROUGHT IRON GOODS:

Hooks,
Hasps,
Staples,
Awning Hooks,
Meat Hooks,
Fence Staples,
Grape Staples,
&c.,
Trap Door Rings,
Chain Links,
Lap Links,
&c.

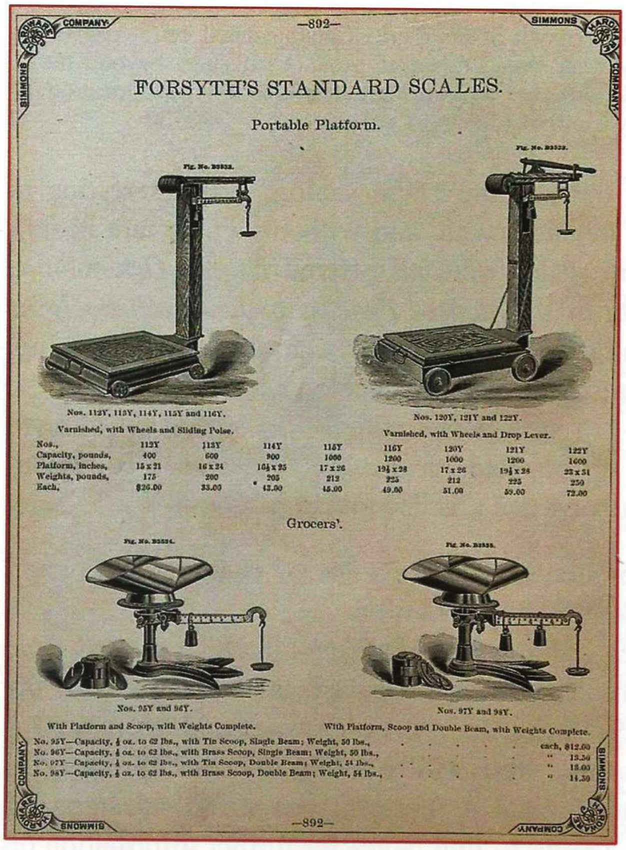
Figure 8B. ≺≺ Forsyth Scale Works Catalog dated 1875, page 2, summarizing the very broad range of product offerings beyond the wide range of 36 different scale designs from the Erie, PA location. (Gregg and Amy Motter Collection)

As one reads through the 1875 catalog, it is interesting to note the even balance (with, and without, a side tare beam), trip, and union scales were all offered *Highly Ornamented with Gold Leaf by a Patented Process owned exclusively by us.* The resulting aesthetic effect was absolutely stunning. This author searched, but was unable to locate a copy of the patent. I am not sure if this patent was owned by Forsyth Scale Works, or they had yet another undisclosed collaboration that actually owned this decorative patent.

The decade of the 1880s saw a lot of changes to Forsyth Scale Works and Forsyth's family:

1. Bankruptcy of Forsyth Scale Works in 1882.
2. The bankruptcy directly impacted three members of the Forsyth family: Orrin, the principle owner and operator; Joseph, Orrin's son, who was working for the company in Rochester; and Edward A. Forsyth who was a salesman for the company. (Refer to End Notes for further information on these three gentlemen.)
3. Late in 1883, George Forsyth, Orrin's son, applied for, and was granted, several extended home leaves from his military duties as Post Commandant with the U.S. Army in Arizona to *attend to some family matters* in Chicago. His Father's firm, Forsyth Scale Works, had run into *financial difficulties*, and the company was going through an extended closure process.
4. Edward A. Forsyth moved to Youngstown, Ohio to establish a new operation named Forsyth Scale Company.
5. Joseph Forsyth moved to Chicago to join his father in the sales office of Forsyth Scale Company. By all appearances, he was quite successful as evidenced by their scales being marketed by the famed Simmons Hardware Company known for their Keen Kutter tools that are now very collectable. Simmons stock consisted of a wide assortment of items, including ammunition, knives, mincers, wires, tools, and even dog collars. They defined products by saying, *If you can't eat it, and it don't pour or fold, it's hardware.* It is interesting to note in Figures 9 and 10, the Simmons Catalog only states "Forsyth's Standard Scales" on their catalog pages; not Forsyth Scale Company! Note: the "Standard" in the statement here indicated U.S. Standard scale designs.

The Forsyth Scale Company was now offering over 100 different types of scales! Their business grew very rapidly from late 1889 to the early 1890s. By 1890, Forsyth Scale Company was significantly behind in fulfilling orders due to a lack of space in their works. In that year, they more than doubled the square footage of the works. Additionally, *Iron Age* publication reported Forsyth had *completed many orders for specialty scales and were in the process of designing a very peculiar scale of great capacity for a large manufacturing company.* Unfortunately, this author was never able to identify the owner for that large scale.



COMPANY —892— SIMMONS

SIMMONS HARDWARE COMPANY

FORSYTH'S STANDARD SCALES.

Portable Platform.

Fig. No. B3532.

Fig. No. B3533.

Nos. 112Y, 113Y, 114Y, 115Y and 116Y.

Varnished, with Wheels and Sliding Poise.

Nos. 120Y, 121Y and 122Y.

Varnished, with Wheels and Drop Lever.

Nos.,	112Y	113Y	114Y	115Y	116Y	120Y	121Y	122Y
Capacity, pounds,	400	600	900	1000	1200	1000	1200	1600
Platform, inches,	15 x 21	16 x 24	16½ x 25	17 x 26	19½ x 28	17 x 26	19½ x 28	23 x 31
Weights, pounds,	175	200	205	212	225	212	225	250
Each,	$26.00	33.00	43.00	45.00	49.00	51.00	59.00	72.00

Grocers'.

Fig. No. B3534.

Fig. No. B3535.

Nos. 95Y and 96Y.

With Platform and Scoop, with Weights Complete.

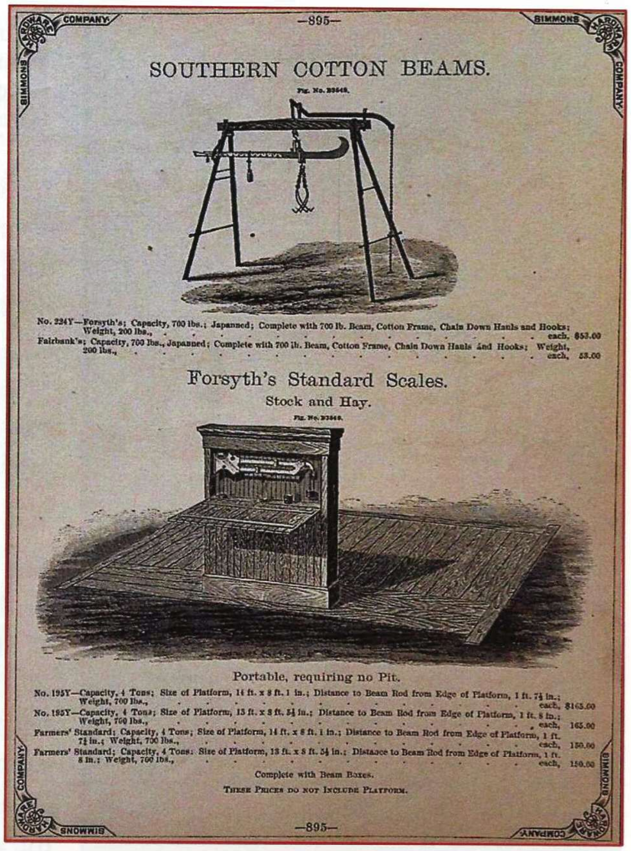
Nos. 97Y and 98Y.

With Platform, Scoop and Double Beam, with Weights Complete.

No. 95Y—Capacity, ½ oz. to 62 lbs., with Tin Scoop, Single Beam; Weight, 50 lbs., ... each, $12.00
No. 96Y—Capacity, ½ oz. to 62 lbs., with Brass Scoop, Single Beam; Weight, 50 lbs., ... " 13.50
No. 97Y—Capacity, ½ oz. to 62 lbs., with Tin Scoop, Double Beam; Weight, 54 lbs., ... " 13.00
No. 98Y—Capacity, ½ oz. to 62 lbs., with Brass Scoop, Double Beam; Weight, 54 lbs., ... " 14.50

—892—

Figure 9. ᐱᐱ Simmons Hardware 1888 Catalog, Page 892 selling Forsyth Portable Platform and Grocers Scales (Gregg and Amy Motter Collection)



COMPANY —895— SIMMONS

SIMMONS HARDWARE COMPANY

SOUTHERN COTTON BEAMS.

Fig. No. B3549.

No. 224Y—Forsyth's; Capacity, 700 lbs.; Japanned; Complete with 700 lb. Beam, Cotton Frame, Chain Down Hauls and Hooks; Weight, 200 lbs., ... each, $53.00
Fairbank's; Capacity, 700 lbs., Japanned; Complete with 700 lb. Beam, Cotton Frame, Chain Down Hauls and Hooks; Weight, 200 lbs., ... each, 53.00

Forsyth's Standard Scales.

Stock and Hay.

Fig. No. B3548.

Portable, requiring no Pit.

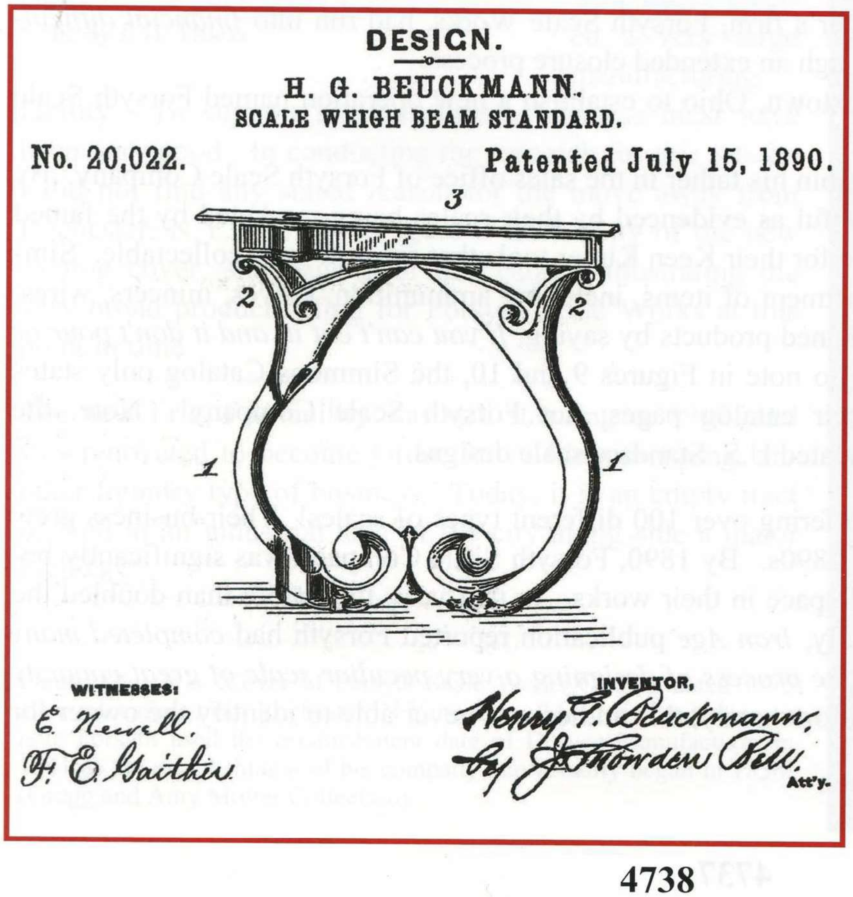
No. 195Y—Capacity, 4 Tons; Size of Platform, 14 ft. x 8 ft. 1 in.; Distance to Beam Rod from Edge of Platform, 1 ft. 7½ in.; Weight, 700 lbs., ... each, $165.00
No. 195Y—Capacity, 4 Tons; Size of Platform, 13 ft. x 8 ft. 5¼ in.; Distance to Beam Rod from Edge of Platform, 1 ft. 8 in.; Weight, 700 lbs., ... each, 165.00
Farmers' Standard; Capacity, 4 Tons; Size of Platform, 14 ft. x 8 ft. 1 in.; Distance to Beam Rod from Edge of Platform, 1 ft. 7½ in.; Weight, 700 lbs., ... each, 150.00
Farmers' Standard; Capacity, 4 Tons; Size of Platform, 13 ft. x 8 ft. 5¼ in.; Distance to Beam Rod from Edge of Platform, 1 ft. 8 in.; Weight, 700 lbs., ... each, 150.00

Complete with Beam Boxes.

These Prices do not Include Platform.

—895—

Figure 10. ᐱᐱ Simmons Hardware 1888 Catalog, Page 895 selling Forsyth Cotton Beams; Stock and Hay Scales (Gregg and Amy Motter Collection)



DESIGN.

H. G. BEUCKMANN.

SCALE WEIGH BEAM STANDARD.

No. 20,022. Patented July 15, 1890.

WITNESSES:

E. Newell.
F. E. Gaither

INVENTOR,

Henry G. Beuckmann,
by J. Snowden Bell,
Att'y.

In 1869, Henry Beuckmann was a safe maker in Rochester, N.Y., and that is most probably how he met Forsyth and his partners, since they also manufactured safes. In the mid-1880s, Beuckmann moved to Youngstown, Ohio with Edward A. Forsyth to assist in the establishment of the new Forsyth Scale Company.

Figure 11. ᐸᐸ U.S. Design Patent, 20,022, 'Heart-Shaped' Scale Support by H. G. Beuckmann.

This is the famous 'Heart-Shaped' scale support patent. The one and only claim states: *The design for a scale weigh-beam standard, ..., comprising two side members united at their bases and thence curved first outwardly and then inwardly to an upper connection, one to the other, substantially in the form of an inverted heart, and a transverse cap-plate connected to the point of the heart.*

This patent was apparently assigned to the Forsyth Scale Company. The scales produced, based on this patent, bear the simple maker's mark of "Forsyth" on the front of the transverse cap-plate described in the patent. These scales are very distinctive in appearance, and have become very collectable.

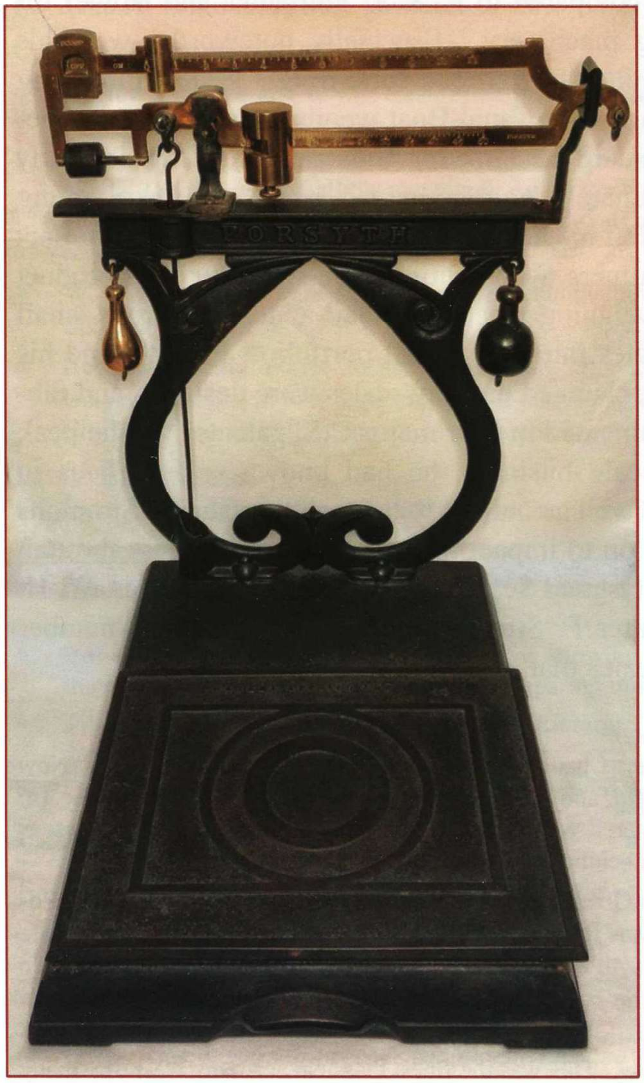


Figure 12A. ▲▲ Forsyth 'Inverted Heart' scale. Note the 'Inverted Heart' design on the Beam Support at the back of the scale. This scale is also marked "Patent Applied For" on the scale load platform. These scales have become quite collectable. (Gregg and Amy Motter Collection)

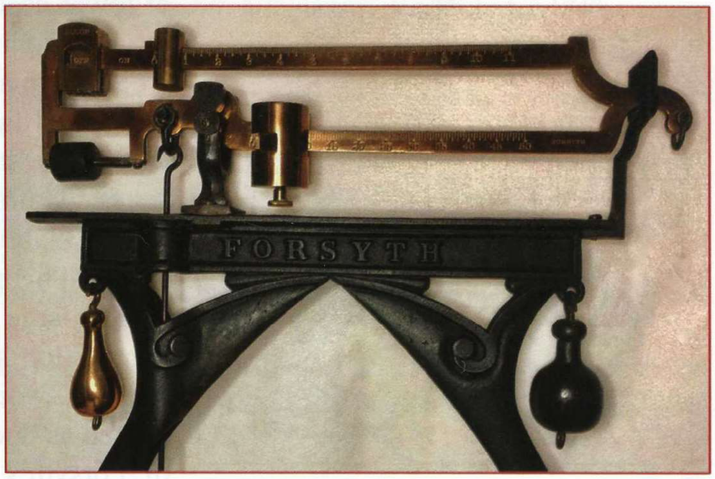


Figure 12B. ▲▲ Close-up view of the Beam. Note the one-piece construction of the Beam with horizontally split Poises to allow attachment of the Poises to their respective Beams all per U.S. Patent no. 75,146 issued March 3, 1868 to O. Forsyth and J. Truex.

U.S. Patent number 454,394 is an improvement on a weigh-beam where the object was *to prevent an undue degree of movement of the beam about the fulcrum upon the application, and release, of load as well as a simple and convenient stop for a weighing-beam and serve as a balance-index* (see figure 13).

This patent was also assigned to the Forsyth Scale Company of Youngstown, Ohio since Beuckmann was still living in Youngstown, and working for the company at that time.

It appears Henry Beuckmann continued living and working in Youngstown for Forsyth Scale Company until the business closed for good sometime prior to 1900. Again, the documentation is not very definitive on the exact date. Beuckmann then moved back east, and worked for Jones of Binghamton! His initial patent for Jones was U.S. Patent number 825,293. This patent was for a Pitless Scale issued July 10, 1906. Here again is yet another example of Forsyth's men patenting, and pursuing, one of the main areas of E. & T. Fairbanks' business!

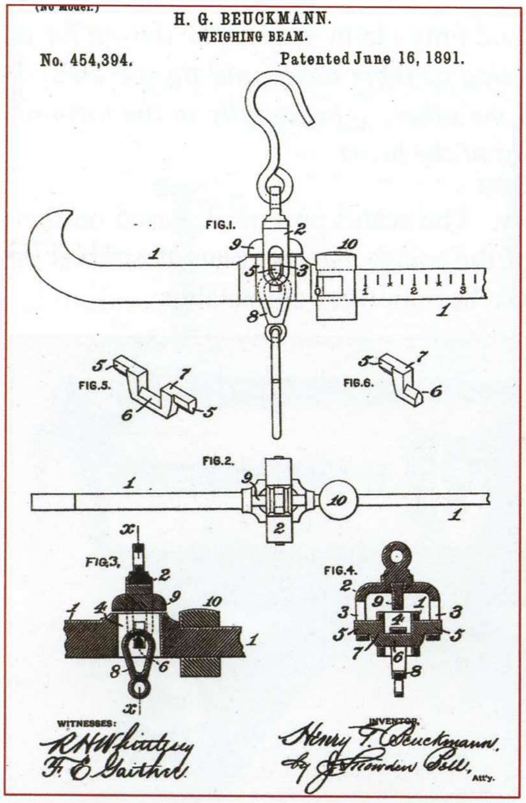


Figure 13. << U.S. Patent 454,394, Weigh Beam by H. G. Beuckmann.

The closure of Orrin Forsyth's last scale-making enterprise marked the end of a six-decade era of large weighing machinery and small counter-top scale design innovation produced by three different companies. It all started out in Rochester, N.Y. with Chauncey Duryee, a self-taught mechanical genius, developing better designs that were safer, more reliable, and offered at lower cost (compared to E. & T. Fairbanks and Howe) for large weighing machinery. Especially noteworthy were his weighing machines for railroad cars, freight scales, Fire King Safes, and famed Erie Canal Boat weighing machines that became the "standard design" for U.S. canal systems in many states. Unfortunately, Duryee passed away at the very young age of 39, but left his legacy in the capable hands of Orrin Forsyth and his partners, who continued on with Duryee's product line of large weighing machinery, and added numerous small counter-top scales into the overall portfolio. Forsyth, and his partners' work, changed the way scales were designed and fabricated as documented in four major U.S. patents. At the peak of Forsyth's scale business, he had known sales offices in Rochester; N.Y.; Youngstown, OH; and Chicago, IL; as well as indirectly through the famous Simmons Hardware Catalog of Chicago. Forsyth's partners went on to impact the overall scale business through working for Jones of Binghamton, Weeks Scale Works, Osgood Scale Company, Leggette Scales, W. H. Jones, and Rochester Scale Works. Additionally, Walter F. Stimpson utilized U.S. Patent number 75,146 by Forsyth and Truex in his famous computing scales that are now also very collectable.

People End Notes:

- **Chauncey Duryee** was spelled as Duryea in some documents. Chauncey was born in 1817 in Cayuga County, New York. His father died in 1827, leaving him all alone in the world, and he apprenticed himself to a blacksmith at age 14. Later in life, he married Perlina Minerva Pierce in 1834, partnered with Orrin Forsyth in 1845, and died in Rochester, N.Y. in 1856 (buried in Mount Hope Cemetery). Chauncey left behind a wife and seven children.
- **Edward A. Forsyth**, son of John Hubbard Forsyth (brother to Orrin) who died at the Alamo in 1836. Apparently, Edward was adopted by Orrin after the death of his brother. He was initially one of four investors in Rochester City Scale Works (as noted in Figure 2) and later was a salesman for Forsyth & Company, and finally the owner of Forsyth Scale Company in Youngstown, Ohio.
- **George A. Forsyth**, Orrin Forsyth's son, went for decades with no apparent source of income as indicated by these known activities: 1850 to 1855 studied at Canandaigua Academy. This was the finest classical academy west of Albany on Lake Canandaigua and was a prominent social and cultural center and home to New York's finest families boasting daily newspapers, literary and scientific studies, every denomination of church and recitals and concerts. In 1856, he joined the 'Dragoons', a military group who paraded in bright scarlet uniforms to impress family, friends, and especially admiring young ladies. George became a decorated hero in his military career, rose to be a Brigadier General, and was present at the Appomattox Court House with General Grant for General Lee's surrender ending the U.S. Civil War in 1865. After the War, he entered the study of law in Chicago (came home from military duty to live with his father who had relocated from Rochester to Chicago by this point in time), and later entered Chicago politics.

- **Orrin Forsyth** was 8th generation from George Brewster who came to America in 1620 aboard the Mayflower, his Great -Grandfather (a Connecticut Yankee) was killed in the American Revolution, Grandfather George Alexander (Sandy) served in the War of 1812, Uncle John Hubbard died with David Crocket and William Travis defending the Alamo. In the historical documents, his name is sometimes spelled as Owen and Forsyth is sometimes spelled as Forsythe. Orrin was born in 1809 on the family farm in Avon, N. Y. Orrin's businesses include: a mercantile in Muncy, PA in 1830, bridge building and freight in 1835, and a hotel on St. Paul St. in Rochester in 1845. In 1832, he married a local girl Elizabeth Ealor Frederick. Together they had 4 children: Mercy (1834), Mary Matilda (1836), George Alexander, nicknamed Sandy after his Grandfather, (1837), and Joseph (1839).
- **A. Leggette**, 3 Andrew St., Rochester, N.Y., mfg. of scales, counters, and portable scales. Established 1855.
- **John Nagel**, 113 Joseph, with Forsyth & Company, Established 1849.
- **John H. Truex** (born in St. Lawrence County, N.Y.), 5 Stewart, with Forsyth & Company. Established in 1840.

Company End Notes:

- **Harley J. Howe & Co.** was established in 1868 based upon the old Rochester Scale Works with three principles: H. J. Howe, John Nagle and Christopher Sandrock. (Howe was born in N.Y.; Nagle born in Strasburg, France, and Sandrock born in Germany.) The works, salesroom, and offices were at 94 Andrews Street, Rochester. H. J. Howe & Co. employed 18 artisans, and all the machinery was water-powered by the Genesee River. Company produced scales from tiny quarter ounce counter scales to 50 ton Railroad weighing machines. In the initial year, it earned $20,000 with $7,000 of capital invested.
- **W. H. Jones**, 5 Stewart, Rochester, N.Y., manufacture of scales, baggage barrows, and warehouse trucks with Forsyth & Company. Established 1854.
- **Rochester Scale Works** located at 15 Water Street, Rochester, appears to have done all of the foundry work for the Duryee and Forsyth scale enterprises over the years. The name of the company changed many times including Rochester City Scale Works as the company ownership changed.

Location End Notes:

- **Lake Canandaigua**, fourth largest lake in the Finger Lakes Region of New York.

Acknowledgements:

- Ben Smith, Jackson MI, Long-time ISASC member, for sharing his original Forsyth Scale Works research and letters with the Rochester New York Historical Society.
- Bill and Jan Berning, ISASC members, for allowing me to photograph their 1892 Osgood Scale Company catalog and the wooden Forsyth shop sign for use in preparing this article.
- Trina Brown, Head Librarian, Smithsonian Libraries, National Museum of American History Library for research on the various Duryee and Forsyth companies.
- Greg Moss, ISASC member, for identifying Forsyth Scale Company in Youngstown, Ohio in the course of his research.

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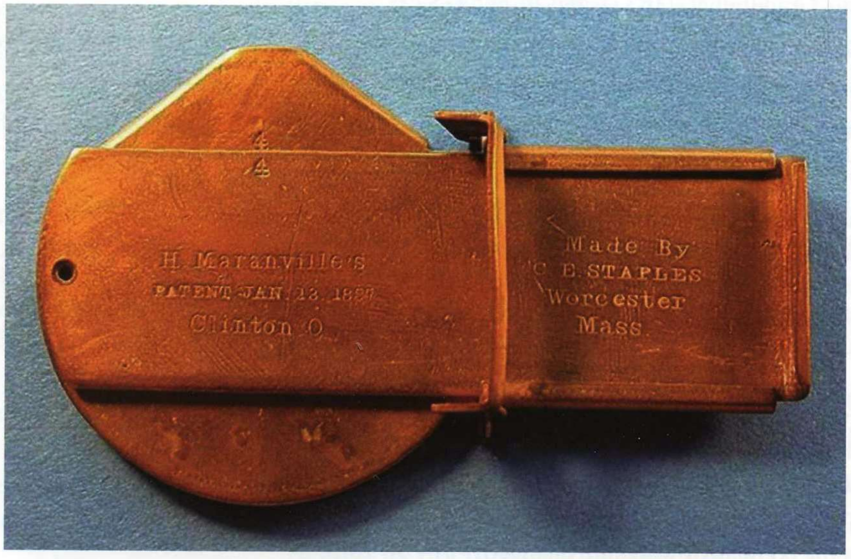
1857 Maranville Coin Tester, 3

BY MALCOLM MATHIAS

All “known” examples of the 1857 Maranville Coin Tester are identified by numbers on both the back of the pan, and again on the back of the sliding beam.



No 4: Mike Foster Collection

The numbers are most likely identifiers marked during manufacture to identify “matching parts” for the pan and the beam. The matching was necessary to ensure that the coins balanced at the points marked on the sliding beam. If the coin tester did not balance after manufacture, there was probably some adjustment in the weight of the beam by filing the rounded end of the beam to suit. Once the required balance was achieved, the two parts were probably numbered with matching numbers to ensure they stayed together for later sale.

1857 Maranville CCDs identified (39 in total):
3, A3, 4, F4, 7, F8, 11, 11, 13, G16, T17, 18, 20? 25, B32, 33, 34, 39, 40, 42, 42, M46, 48, 48, 56, L58, 64, P64, R66, 67, V68, L70 (L98 on beam), 71, D79, 86, 88, 88, 93, D96.

Fourteen 1857 Maranvilles are marked with an Alpha letter as well as a number.

A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
3	**32**		**79, 96**		**4, 8**	**16**					**58, 70/98**	**46**
N	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
		64		**66**		**17**		**68**				

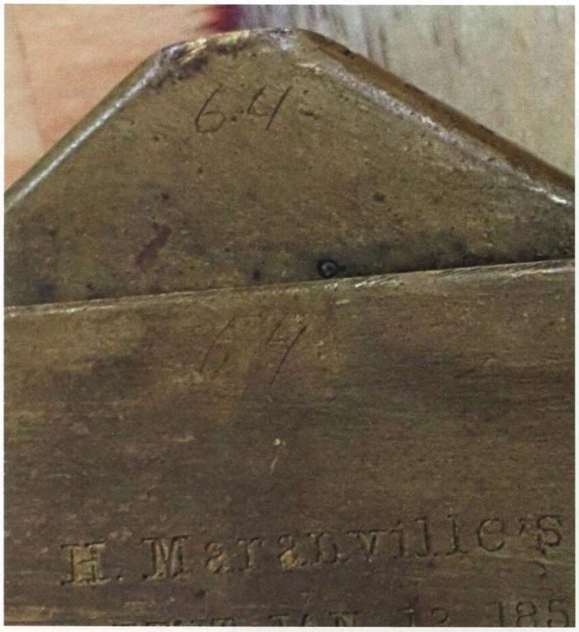
The reason for these alpha letters is unknown, but they may relate to the personal initials of the workers employed by Staples in the Merrifield building in Worcester, Mass.

Some numbers are hand scribed (4) with a sharp pointed instrument, but the majority (35) have numbers imprinted using a number punch and hammer. All numbers fall within the range of 1 to 100, but there is evidence of repetition with some numbers.

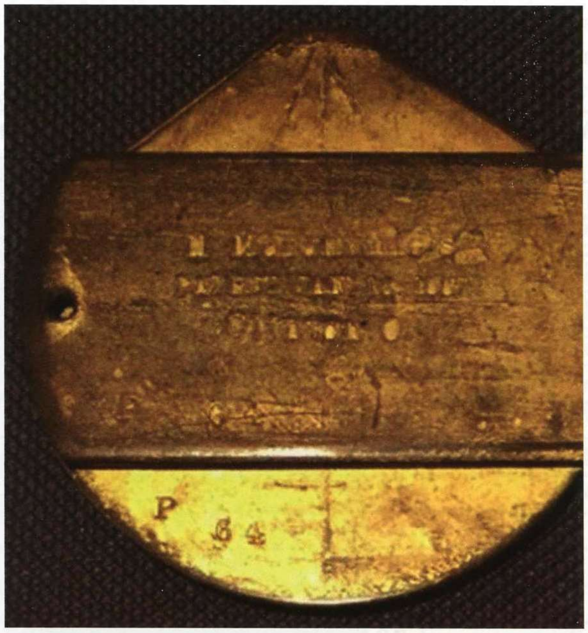
1. some hand scribed (e.g.: 64) are repeated with punched examples (e.g.: P 64);
2. some punched above (e.g.: 88) are repeated with another punched below (e.g.: 88);
3. some punched above are simply repeated (e.g.: 11 and 11, 48 and 48);
4. some punched below are also simply repeated (e.g.: 42 and 42).

MHM ID#	**Serial Number**	**Scribed Above**	**Punched Above**	**Punched Below**	**Alpha Below**
1	**3**			**3**	
2	**A 3**				**A 3**
3	**4**		**4**		
4	**F 4**				**F 4**
5	**7**			**7**	
6	**F 8**				**F 8**
7	**11**		**11**		
8	**11**		**11**		
9	**13**	**13**			
10	**G 16**				**G 16**
11	**T 17**				**T 17**
12	**18**	**18**			
13	**20**		**20**		
14	**25**			**25**	
15	**B 32**				**B 32**
16	**33**	**33**			
17	**34**		**34**		
18	**39**		**39**		
19	**40**			**40**	
20	**42**			**42**	
21	**42**			**42**	
22	**M 46**				**M 46**
23	**48**		**48**		
24	**48**		**48**		
25	**56**		**56**		
26	**L 58**				**L 58**
27	**64**	**64**			
28	**P 64**				**P 64**
29	**R 66**				**R 66**
30	**67**		**67**		
31	**V 68**				**V 68**
32	**L 70 / L 98**				**L 70 / L 98**
33	**71**		**71**		
34	**D 79**				**D 79**
35	**86**			**86**	
36	**88**			**88**	
37	**88**		**88**		
38	**93**		**93**		
39	**D 96**				**D 96**
		Total = 4	Total = 13	Total = 8	Total = 14
Production	Runs?	1 x 100?	2 x 100	2 x 100	1 x 100

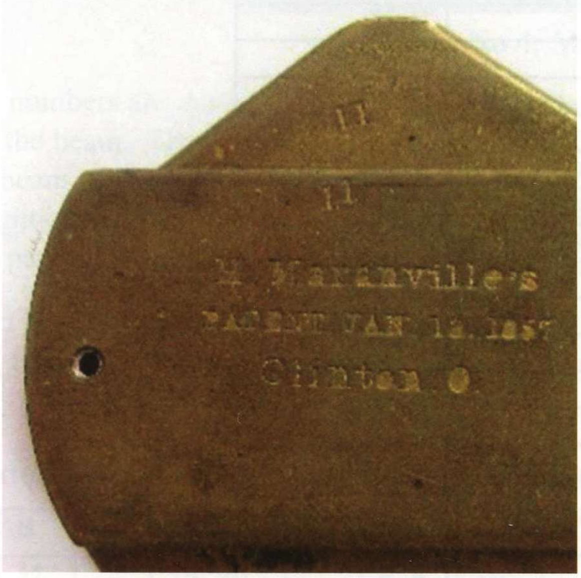
The repetition of some numbers and their location suggests there may have been as many as six production runs of 100 examples (6 x 100 = 600 total).



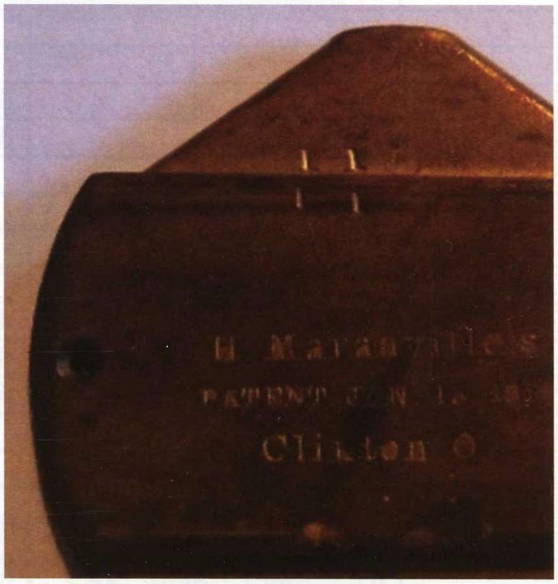
▲ 64 (Hand scribed) eBay 27.6.2019



▲ P 64 Greg Parets' Collection



▲ 11 Eric Soslau Collection



▲ 11 Anon. ISASC Member Collection

The above four different versions of numbering, combined with the duplication, suggests that there may have been six different production runs to replace stock depleted by ongoing sales. Each production run probably made 100 x 1857 Maranville Coin Testers for a possible total of 600 examples. There is no evidence of which production run was done first, second, third, fourth, fifth or sixth but the hand-scribed may have been first, and the "alpha" versions may have been last.

39 examples are "known" to have survived, suggesting a 6.33% survival rate over 162 years (1857 – 2019). Perhaps there are another 561 Maranville Coin Testers waiting to be found?

In order to conserve space in EQM the Author has agreed to forgo including the pictorial record of these 39 CCDs. The entire collection may be found at https://nnp.wustl.edu/library/book/572322.

Editor's Note: See Part 1 of the 1860 Maranville CCD article in the next issue of EQM.

Spade e stadere: Swords & Steelyards

DESCRIBED BY LIA APPARUTI

Spade E Stadere: 100 Romani di diverso gusto e provenienza, by Museo Della Bilancia, Campogalliano, March 2020, 528 pp., matte coated paper 150 g (3 kg!), 24 x 28 cm, paperback stitched+ glossy plasticized hardcover, over 1100 four-color illustrations including 350 photographic evidence of swords and paintings, Italian and English. The cost for readers of the EQM is € 60. Postage to USA with fast and tracked international parcel € 64. Postage for UK with fast and tracked international parcel 49 €. Total € 124 (for USA), € 109 (for UK).
Payments:
1) Paypal to the address didattica@museodellabilancia.it
2) bank transfer to IBAN: IT21 B05034 66670 000000003510 in the name of Libra 93
Reason of payment: Spade e stadere - ISASC

Excalibur, Durlindana and Joyeuse are the names of the mythological swords of King Arthur, Orlando Furioso and Charlemagne: swords that are co-protagonists in the heroic deeds of knights and paladins, as narrated by epic chivalric romance, the pages of which offer accounts of acts of honour, virtue, love and swashbuckling. Such swords were commissioned from specialist swordsmiths, and those belonging to the most important of figures were made to measure and duly customised, being the faithful companions of many a duel and battle.

But when the sword became unserviceable due to wear and tear, or undesirable according to the diktats of the latest fashion, its owner would often decide to replace the pommel (the decorated part of the hilt). At this point, other craftsmen came into play, ones who through skilful modification would revalorise the rejected component, offering it a second lease of life – often one far removed from that for which it had originally been intended.

More often than not, sword pommels would end up in the hands of scale-makers, who – by trimming off the bases or buttons, or adding iron rings and strips or little pieces of lead – managed to *adjust* the mass of the pommel so as to adapt it to the steelyard balance of which the pommel itself would thus become the 'poise' (i.e. the weight that ran along the notched beam).

This volume, published by Libra 93 for the Museum of Scales and Balances, has the merit of analysing, cataloguing and studying over 150 steelyard poises from four different Italian private collections, as well as a limited number from the Museum of Scales and Balances itself (datable from between the mid-twelfth and the mid-nineteenth century): around half these poises derive from the reuse of sword pommels and cannonballs.

Thirteen of these recycled poises are still mounted on their original steelyards: for each of these, practical weighing trials were carried out which in some cases made it possible to pinpoint a geographical attribution to the steelyard by calculating the nature of the measuring system of reference (they are in fact all instruments that predate the introduction of the metric system).

The information sheets on the steelyard poises created using sword pommels were compiled by Lawyer Paolo Pinti and Engineer Mario Troso: two respected scholars in the field of hoplology. Numerous correspondences to the pommels are proposed through images of whole swords, tracked down in museums, private collections and auction catalogues, and with the pictorial portrayals of swords of the same type, so as to better date the findings themselves. The corresponding images of a hoplological nature comprise some 350 out of a total of more than 1,100 images to be found in the volume.

The section on classic steelyard poises (i.e. not those derived from the reuse of a pre-existing artefact) is edited by Lia Apparuti, curator of the Museum of Scales and Balances, in which 60 European artefacts are examined, mainly items of Italian or French origin. Unlike the poises from sword pommels, which almost never feature verification marks, these ones are full of information concerning the metrology in use at the time, testifying to the different forms of periodical verification applied in various countries at various times (letters, numbers, symbols, coats of arms etc.). Also in this section, whenever possible, visual correspondences are given with comparable portrayals of poises, including ones from paintings largely unknown to the public at large, showing scenes of weighing with steelyard balances bearing poises of the same typology. This set of pictorial works makes up a corpus of paintings on the theme that represents a unique body of images in the panorama of volumes dedicated to steelyards, and highlights just how much the study of weighing instruments shown in the paintings (a practice not often adopted by art historians) may even contribute to the dating of the paintings themselves.

Another virtue of this publication is in fact that it aims to go beyond individual specialisations (both hoplological and metrological) and instead create a network of meeting points with other disciplines that make it possible to analyse findings from various areas, in the belief that placing them in a wider context provides scope for a more realistic, complete and less self-referential overview.

SPADE E STADERE
100 romani di diverso gusto e provenienza
Museo della Bilancia

93 AMBITO EUROPEO XVIII secolo

94 AMBITO EUROPEO XVIII secolo

70 AMBITO EUROPEO XVII - XVIII secolo

16 AREA VENETA 1510-1540/1550

There are also sheets relating to pommels, poises and weights of a particular shape: the octahedral cube, of which the origin is analysed and findings are presented not only on other pommels, poises and weights but also on artefacts of various uses and origins (being a form also widely used in Islamic culture).

Finally, a number of poises are presented from the reuse of cannonballs (eleven, split up on the basis of how they were caged to be attached to the steelyard), of a woodcutter's wedge, a candelabra bowl and a firecracker cannon, which testify to the great attention paid to the reuse of materials that characterized pre-industrial society.

Given the importance of the theme of reuse, one of the four essays that open the publication is also dedicated to it, penned by Professor Mario Marchi and Paolo Pinti, while the remaining three (written respectively by Lia Apparuti, Mario Marchi and Achille Lodovisi) deal with the etymological aspect of the word *romano* ('poise'), based on the study of numerous legislative texts, technical dictionaries and monographic manuals on metrology; the next analyses the importance and the typological evolution of steelyard poises, while the last one deals with the aspects of the symbolism found on many of the poises studied here (the snake, the eight-petalled rose, the tree of life, the cross, the Christological IHS symbol, the hexagon, the sun and moon side by side). An extensive bibliography, divided into the two macro-areas – pommels and poises – features 285 titles.

But the volume does not end here, as there are also two major appendices (146 pages in total) dedicated to firecracker cannons and gunners' stilettos, also known as *centoventi*. Both of these appendices are a sort of all-inclusive work on the subject, the author having collected the results of monographic studies on these artefacts, reporting on the various theories as well as verified and published findings – along with some unpublished ones – providing a starting point for those who wish to make further reflections on these intriguing objects.

Swords and Steelyards therefore comes across as a completely original study, wide-ranging but also in-depth, of interest to historical metrology enthusiasts but also to hoplologists, with a broad yet precise and detailed vision, intended not only for readers of Italian thanks to the complete translation into English of the essays, as well as English summaries of the contents found in the information sheets and appendices.

The information sheets, featuring major photographic support, contain detailed descriptions and technical data, and where there are punch marks on the poises showing figurative motifs, they are reproduced as line drawings that afford a better reading of the details than the photographs alone.

Swords and Steelyards aims to become a reference manual, a useful tool for those who are interested in the topics it addresses and who wish to investigate, interpret and deepen their appreciation of these artefacts: ones considered a minor art, yet which are among the most vivid and realistic reflections of life in centuries gone by.

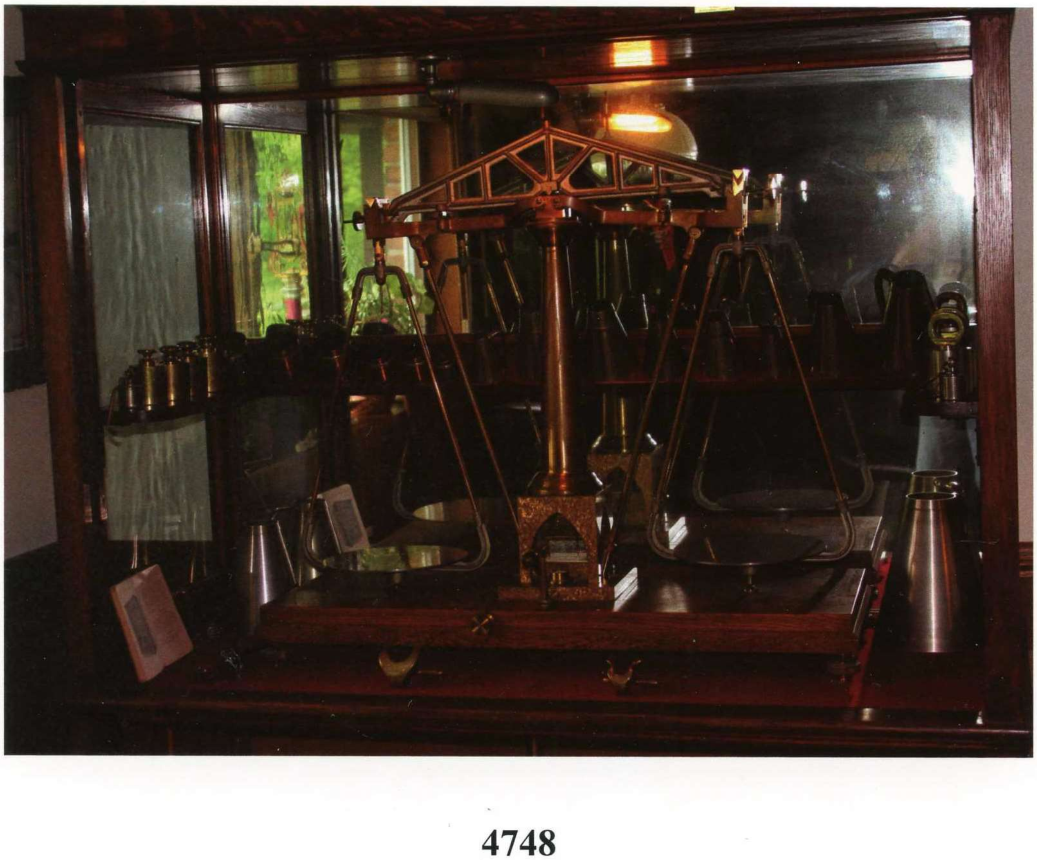
From Collection to Obsession

BY LARRY PRESS

While I hate to admit it, the title as I look around the house, and elsewhere, is most appropriate, how did I ever get here?? My passion for antiques and most things falling into that broad category started out focusing on primitive tools. The idea of a blacksmith taking a hunk of iron and transforming it into a useful tool or piece of functional art, a carpenter forming the tools of their trade out of a slab of wood consumed my thoughts with the creativity born out of necessity. So, the story begins, as I stumbled on individual primitive tools the collection began but for the most part remained under control, both with amount and cost, until that fateful day when a friend offered a fair size lot of tools that contained a scale and weights. Nothing elaborate, just a dirty Fairbanks balance with the weights contained in a wooden holder. Having absolutely no interest whatsoever in either, I attempted to negotiate the deal without them. The reception to my offer was an unequivocal NO, it was all or nothing! So off I went on my merry way with the unwanted scale and weights with thoughts that they would be sold at some future date as soon as I could get around to cleaning the years of dirt, grime, and neglect off. I can't say for sure how long it was that they remained hidden away before I finally got the ambition to find them a new home since they still hadn't piqued my interest at all!

Then it happened, as I cleaned the ceramic plates they took on the appearance of being new, as the brass was next, the luster that appeared from beneath the filth and tarnish was amazing, but the best was yet to come. It was now time for the main body of the scale, as the layers of accumulated dirt fell away the hand painted gold leaf stenciling glistened! The scale shone as new; sell it? You have to be kidding, a new found passion was born. From this point on, I was on the hunt for antiques, but all I saw were scales. They were everywhere and the more I saw, the nuances of each seemed to pull at my soul. I wanted them all!

What seemed expensive in the beginning went from $50 or $75 to a couple hundred, I was hooked...now to spend a thousand dollars, not such a big deal, I'll find a way, then a whole new world opened and the sky was the limit, all I need to do is figure out how to pay off the credit cards and Jaap! While others have stayed selective to a specific category, I elected to collect all types, from CCD's to lollipop scales, nested weights, wool weights, bell weights, scale literature, and signs, if it was scale related I had to have it or at least try! I had to admit I was and still am obsessed and fascinated by their diversity, beauty, functionality and sheer brilliance of those that were able to bring them to life through the ages! Today, some 30 years and 400+ scales and weights later, the fascination has yet to fade at all!



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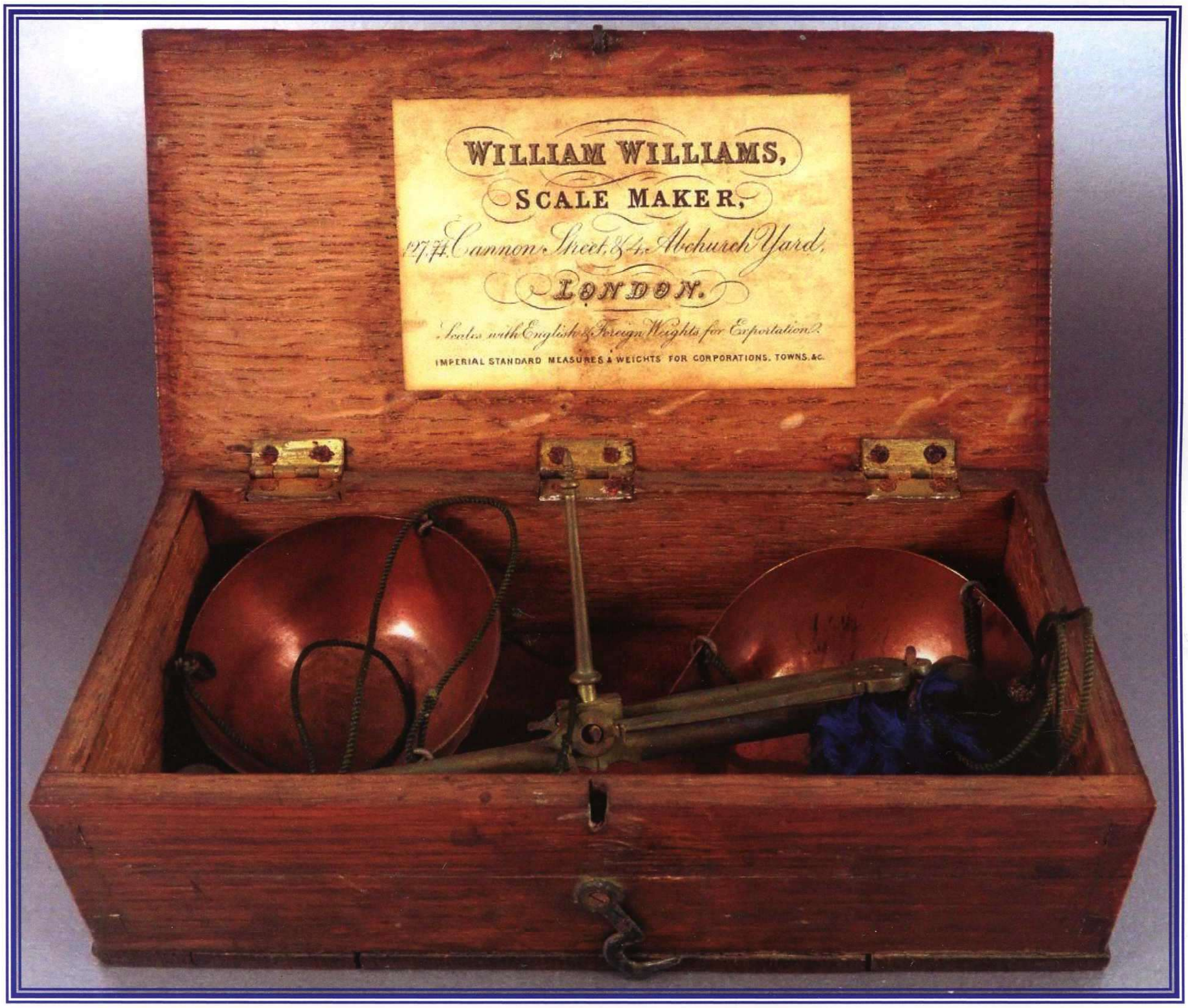
PAGES 4749 - 4776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IMPERIAL STANDARD MEASURES & WEIGHTS FOR CORPORATIONS, TOWNS, &c.

Cover Picture

The ISASC Museum has this tea scale by William Williams of London, with one round hemispherical pan and one scoop so that tea could be slipped into the paper packet without making a mess. Such scales were used in grocers' shops or in tea-testing laboratories. If the box contained weights, it was for a grocer. If it had a little tea weight clipped onto the round pan, it was for testing. Such scales seem to have been made from about 1850 on, but evidence of earlier manufacture would be welcomed. See page 4758 and figure 17 for more information.

Photo by K Beyreis.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Tea Weighing, from Bush to Cup

BY DIANA CRAWFORTH-HITCHINS

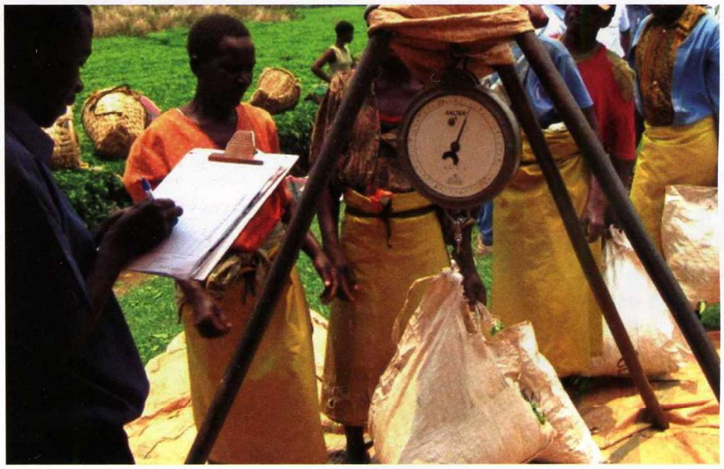
Figure 1. ▲▲ Tea picking heroine. Even today conditions are exhausting & often close to slavery. Some tea pickers in Kenya have brought a court case against a British tea company because they pick for 11½ hours a day, 6 days a week, without a break for food or drink.

Admiring the tea scale made by William Williams (see the cover), I thought it would be interesting to write a few words about them. Little did I know about the complexities of the subject! Tea drinking has been enjoyed in England since about 1658, although it had been popular in Europe for possibly 100 years before the English "discovered" it[1]. It has been grown and processed in numerous countries, it has been exported extensively, governments have seen it as an easy product to tax, and it deteriorates rapidly. What an opportunity to find out why it was and is weighed!

As I discovered, tea was weighed at least ten times between the bush and the tea-cup, and was weighed on at least ten different types of scales (dot'chin, equal-arm on a tripod, platform scale, equal-arm hanging from a beam, steelyard, equal-arm on a pillar & stand, spring balance either dial or long, and hand-held.)

Camellia sinensis tea bushes grew best in cool, damp climates, utilising land that was too sloping for other crops. To quote A. H. Allen, Public Analyst, working on adulteration of tea "*The soil on which tea is grown, the climate, the time at which the leaves are gathered and the details of the manufacture, all affect the quality of the tea*".

Figure 2. ➤➤ Salter exported tea-weighing scales to Malawi, speeding up the process as there was instant read-out. The clerk recording the weight was always a man, in every country.
Note that the women tipped all the tea they picked out of the baskets (seen behind the clerk on the left) into cotton bags to give consistent results.



Only one or two leaves were plucked from the tip of each twig, grown in two weeks after the previous plucking. This was so fiddly and time-consuming that it could only be grown profitably where there was a plentiful supply of cheap labour. See Figure 1. Ever since pickers were employed, each picker was paid according to the weight of leaves picked, (around 45 lbs or 20 kilos.) See Figure 2. The first weighing.

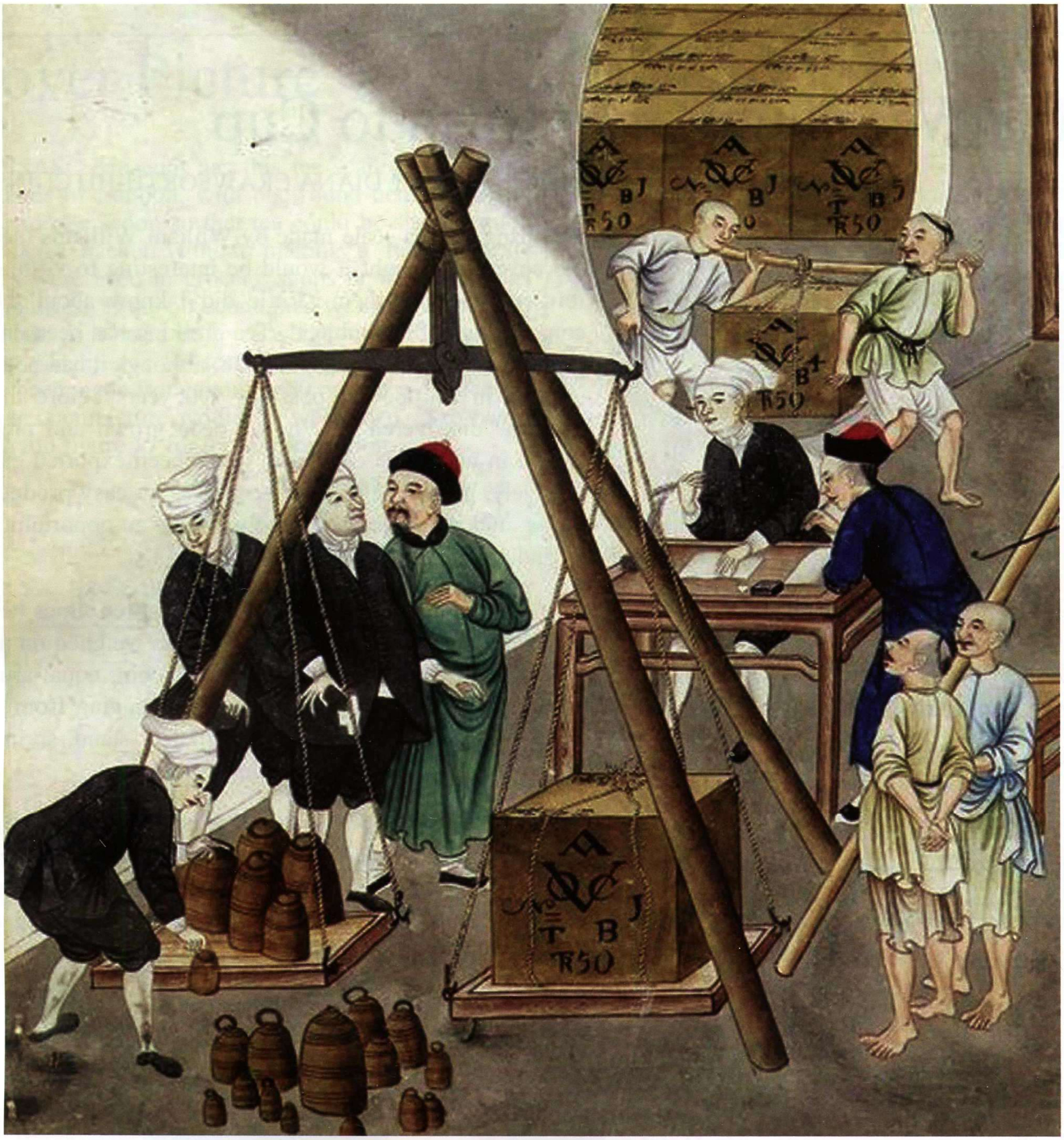
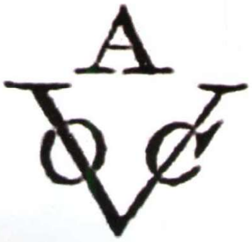


Figure 3. ▲▲ The Chinese sold vast quantities of tea to the Dutch East India Company from about 1580. Through the arch in the background rows of Dutch East Indies chests were stored. It took two men to carry one chest out of the store room. The individual chests were weighed, using ring weights. The chest weighed about 98lbs gross (43 kilos), it looks as if a European man was using European weights. The clerk also looked European, wearing the same uniform as the three men on the left. Two senior Chinese were keeping a check on everything, the man in green working with the weighing team, and the man in dark blue recording the weights with the clerk. The two Chinese men on the right were waiting to carry away the chest being weighed. Once loaded onto a ship, the chests were destined for Amsterdam. Although this painting shows the Dutch Company, the system was virtually identical for the British East India Company. This picture was painted in about 1770. © Ala-

Once picked, the leaves went through several processes of sun withering, tossing and rolling, withering and oxidizing in a hot room, then preventing further changes by heating and roasting, all at various temperatures, for various lengths of time, according to the desired resulting flavour, then were sold to a middle man, a tea merchant who used a dot'chin. See Figure 6. The second weighing.

The European buyer organised the packing of the tea leaves into chests for transporting on ships. See Figure 3. This involved bare-foot men stamping on the tea in the chest to crush it into the tightest possible space, then the chest was put onto a large European-style scale to be weighed, and small amounts of leaves added until the exact weight was achieved (usually 86 lbs net, that is 39 kilos)[2]. The third weighing. The waterproof lining, originally lead, later tinfoil, was wrapped as tightly as possible, and the lid attached. The chest had the type of tea, the destination and new owner marked on it, and it took two men to lift it to go on the ship.

Figure 4. ➢➢ All the companies buying tea in China wrote code on the chests, stating what type of tea it was, and which company had bought it, so that the sea captains could deliver the chests to the right company (or representative of the company). The Dutch East India Company (Verenigde Oost-Indishe Compagnie) always marked the chests with this logo, and put the initial letter of the port at the top. So the chests shown in Figure 3 belonged to the Dutch East India Company and were to be shipped to Amsterdam.



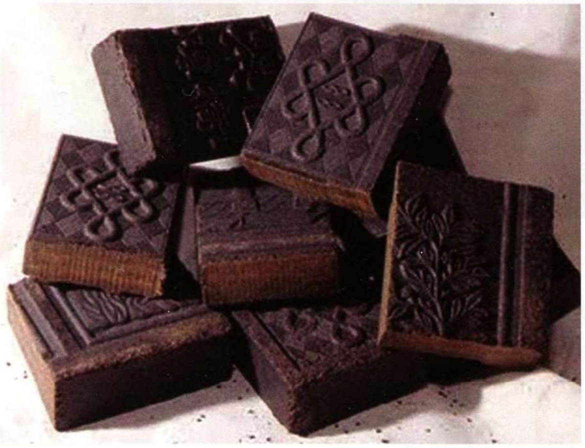


Figure 5. ◄◄ Compressing tea leaves into bricks was the normal way of keeping tea from about 2000BC until about 1300AD, so maybe the article should have started with this picture. The Chinese mixed the leaves with small amounts of grain, starch, or other sticky substance, and pushed the gooey leaves into moulds, to make bricks of about 6½ lbs. These were dried and sealed into parcels or pots. When needed the brick was divided into squares like these, and the required amount was chipped off, roasted to improve the flavour and to kill moulds on the surface. Then the chunk was ground up and made into a drink or a soup.

China was the most prolific tea-producer in the world, but of course, the British in their usual greedy fashion, wanted to grow tea without having to pay huge sums in silver to the Chinese, so the East India Company employed Robert Fortune to smuggle tea plants out of China with his other botanical specimens. He succeeded in escaping with 20,000 seedlings in Wardian cases (little portable greenhouses), but most of the plants died in northern India, ruled by the British. A few hybridised naturally with the local Assam Camellias, and eventually Indian tea proliferated and was exported to England, giving the English passionate tea-drinkers a choice between subtle China tea, and punchy, dark Indian tea after about 1872. See Figure 7.

Tea growing spread to numerous other countries, far away from China, including Ceylon (Sri Lanka), Malawi, Kenya, Turkey, Vietnam, Indonesia, Argentina, Peru, Burundi, Thailand, and even England (in minute quantities!) See Figures 1, 2, and 8.

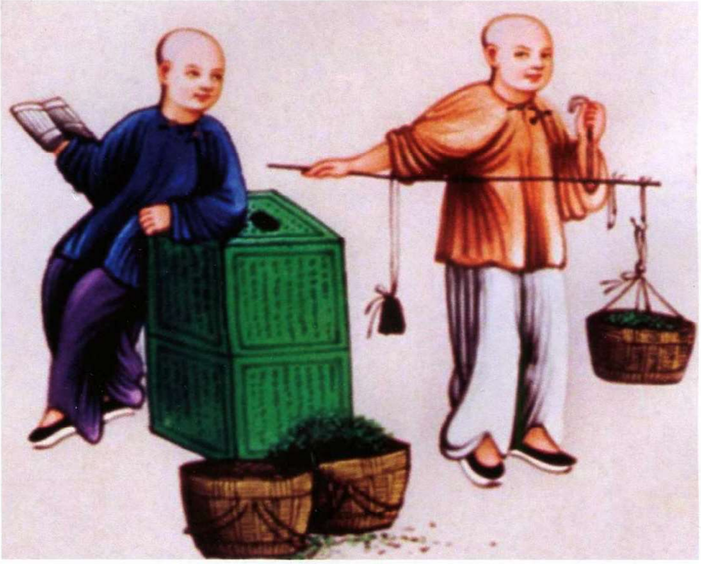


Figure 6. ▲▲ Although the Europeans used an equal-arm beam to weigh tea, the Chinese were perfectly happy to use a dot'chin. The clerk on the left watched as the standing man held the dot'chin in his left hand, and used his right hand to move the poise and hold the beam steady.

Once China tea reached Britain, many of the original exotic names were reduced to words that could easily be remembered. The black tea like Qimen came from China as exotic speciality tea, but now it forms the major part of "English Breakfast Tea". What a pedestrian name! Maofeng in China became "Orange Pekoe" in England, not because it was flavoured with the fruit orange, but because the drink looked a bit orangey.

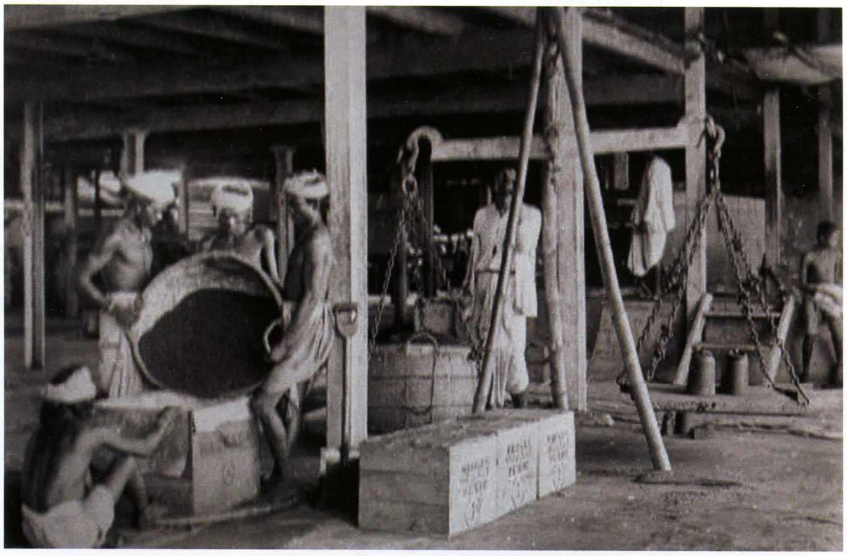


Figure 7. ➢➢ Weighing tea chests in India circa 1880. As the tea was poured into the chest in the warehouse, it was not compressed by a man stamping the tea down before it was weighed as was the habit in China. Note the large ring weights on the scale plate.

Zhu cha meant Pearl tea in China, but became Gunpowder tea in England, because the leaves were rolled into little balls that resembled gunpowder. But what an unappetising name! Green teas with charming names like Huangshan Maofeng (Yellow Mountain Fur, because the leaves had furry white hairs) never got an English name, and even today is sold with its proper Chinese name.

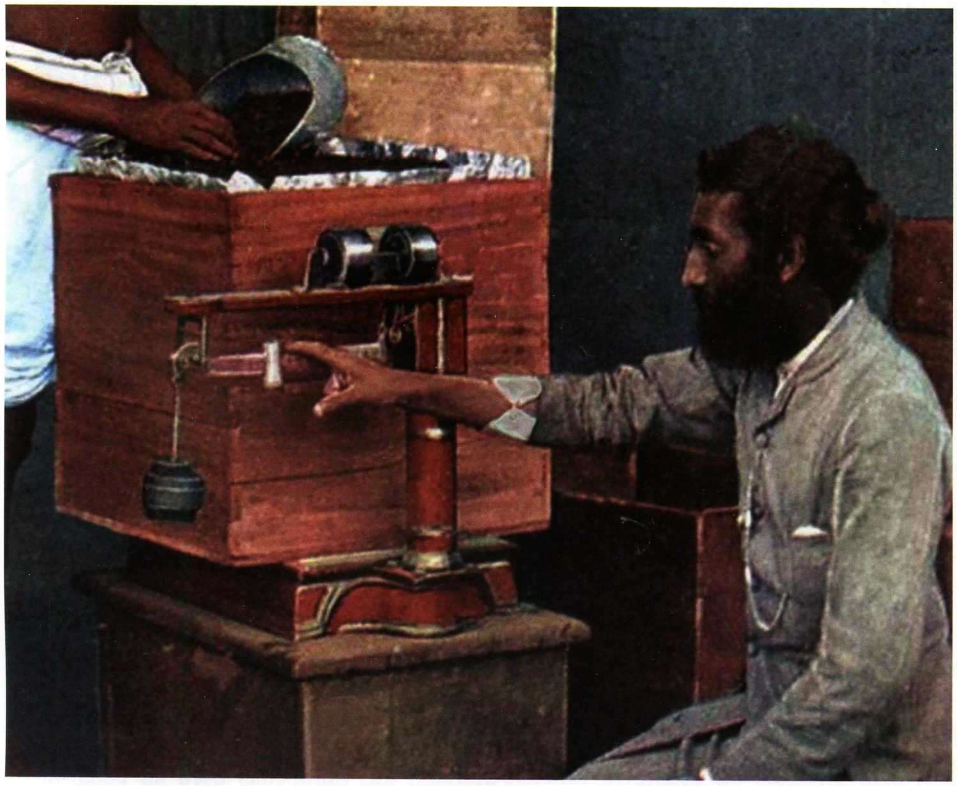


Figure 8. ≺≺ Weighing tea in Ceylon in 1905. The tea chest is labelled "PEKOE CEYLON TEA FACTORY BULKED. Bulked meant that the tea had been tossed into the air with a fork to loosen the leaves, so that twigs and other bits could be removed. Bulking was done in London ware-houses to Indian tea, as adulteration was frequent. London buyers would not buy the tea until it had been bulked.

The platform scale was raised on a box so that the operative read off the graduations easily. Tea was added from a scoop to achieve exact weight. © Alamy

Names such as Assam, Nepal, Darjeeling, Nilgiri, Rize, and Ceylon, told the customers where the leaves were grown. Some tea growers added scents from other plants, either from flowers or from sweet oils, so chests were labelled with names like Cowslip Pekoe or Earl Gray (with oil of bergamot added).

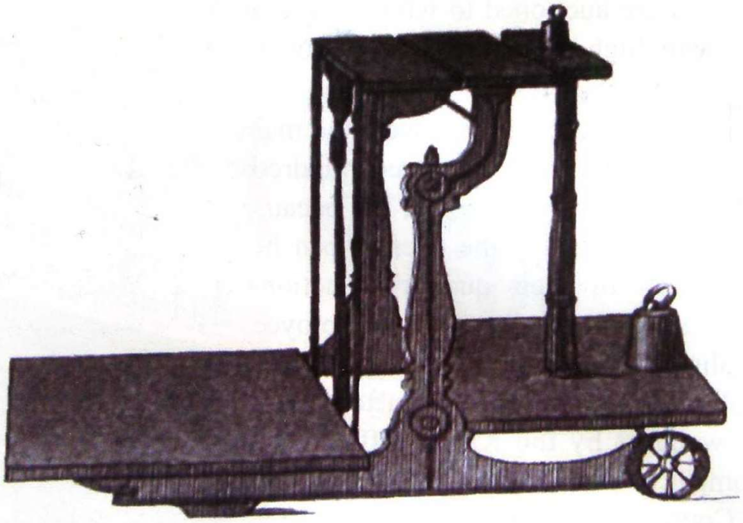


Figure 9. ➢➢ George Medhurst recommended his inverted roberval scales for weighing tea [chests] in about 1815. He'd invented roberval scales in 1810, and quickly invented variations that were very easy to use compared with equal-arm scales with chains that got in the way. When their use was queried in a Parliamentary Commission, it was pointed out that the load only needed to be lifted a few inches. It was not mentioned that the scale could be wheeled like a wheelbarrow, and used on any flat surface, or that it did not require a beam above on which to hang the scales, or a tripod with wide-spread legs.

Pu'erh teas were exported to England in small amounts for Chinese people living in London, as they maintained the tradition of drinking ground up tea bricks that had started before 2000BC. See Figure 5. It was compressed into bricks weighing about 6½ lbs (3 kilos)[3] that could be kept for several years. The flavour matured with aging, and, depending on its origins, had very varied flavours, so the bricks were labelled with the region and year it was produced. There were two types of Pu'erh tea, cooked types that had gone through a process which accelerated post-fermentation, and raw types that had gone through the process of gradually darkening by exposure to the environment instead of fermentation.

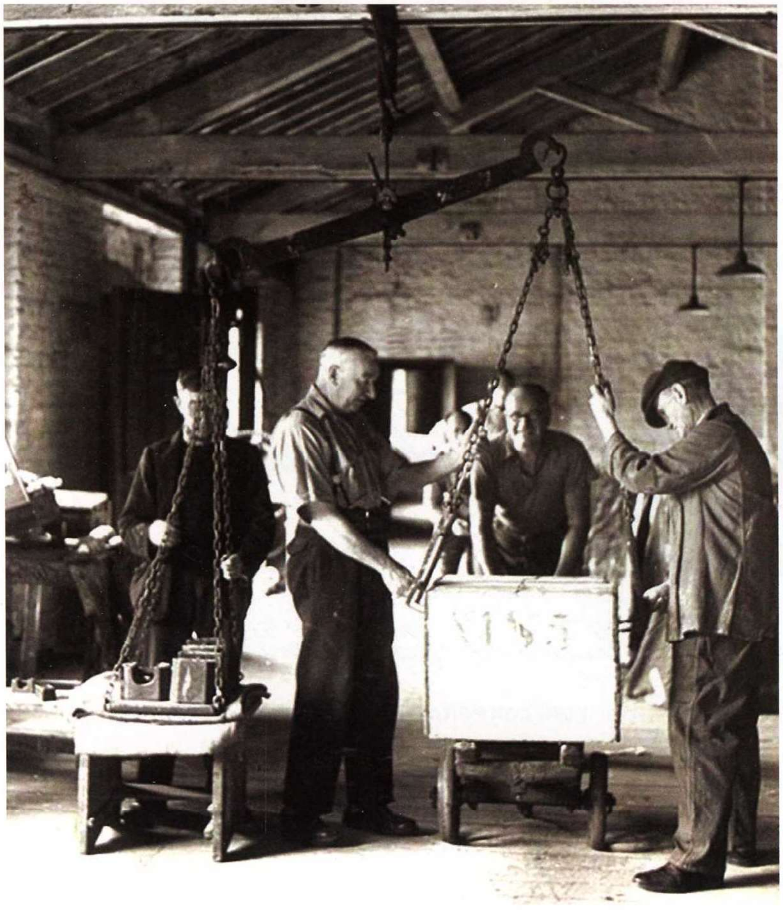


Figure 10. ⮜⮜ The London Customs House in 1949. It took one man to roll the trolley, with the chest on it, to the scales. It took two men to apply the hooks at the end of the chains. It took one man to check the weights on the left hand plate, and the clerk (out of sight on the left) to record the gross weight. Were they giving employment to surplus service men returned from World War II? If they had used a platform scale like the one in figure 8, one man could have been dispensed with. Vandome supplied the scales for the Customs House in London.

When tea arrived in England, it had to go through Customs, to be taxed at 119%. (For example, if the chest was valued at £10 in the ship, the Customs slapped on a tax of £12, so the chest was valued at £22 in the East India Company Warehouse). The Customs weighed each chest, or a sample selection of chests, and determined the tax. See Figure 10. The fourth weighing. After the tax had been paid, the chests were auctioned to wholesale merchants or major retailers, and the chests moved out of the dock area with high brick walls into the towns.

The East India Company[4] were the main importers and they employed hundreds of men in their warehouses, but because they had to display the chests open before each of their quarterly auctions, they suffered badly from employees stealing handfuls of tea, sometimes up to 2½lbs in weight. The stolen tea had to be weighed by the King's Officer or a Company Elder before the prisoner went to Court. The fifth weighing.[5] The Old Bailey Court Records contain hundreds of cases of theft, leading to a surprising number of acquittals by sympathetic juries, but also to transportation,[6] whipping or imprisonment.

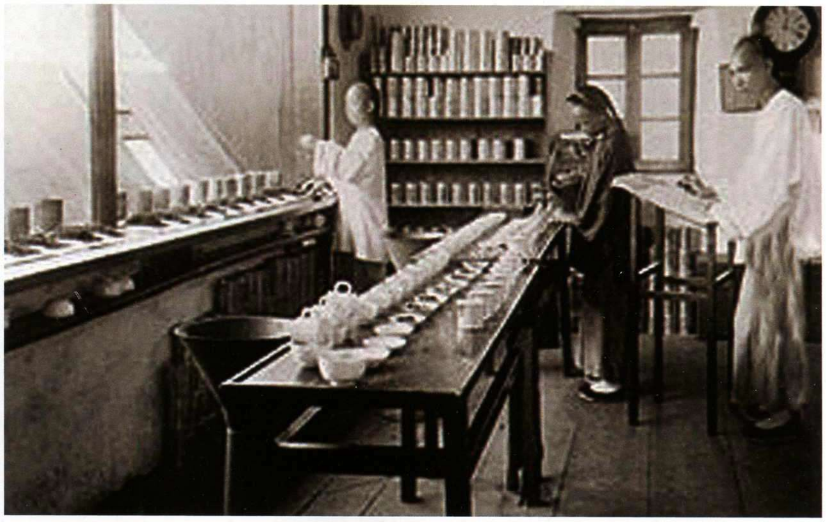
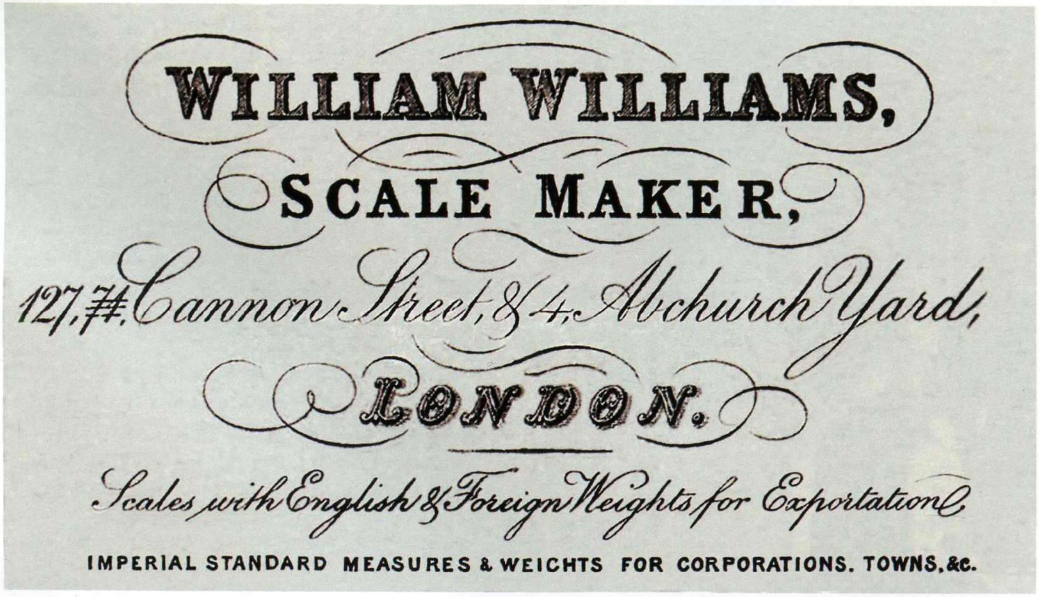


Figure 11. ▲▲ The samples of tea on the windowsill were examined closely, smelled and checked for adulteration. Each type was weighed using just a tea weight (44 grains, 2.84 grams, or 1/10 oz). The sample was covered with exactly the correct amount of boiling water in the cup, and left for four minutes. The taster swished a mouthful from each cup, then spat it out into a spittoon. Then he decided which teas would blend together to be sold under one name.



WILLIAM WILLIAMS,

SCALE MAKER,

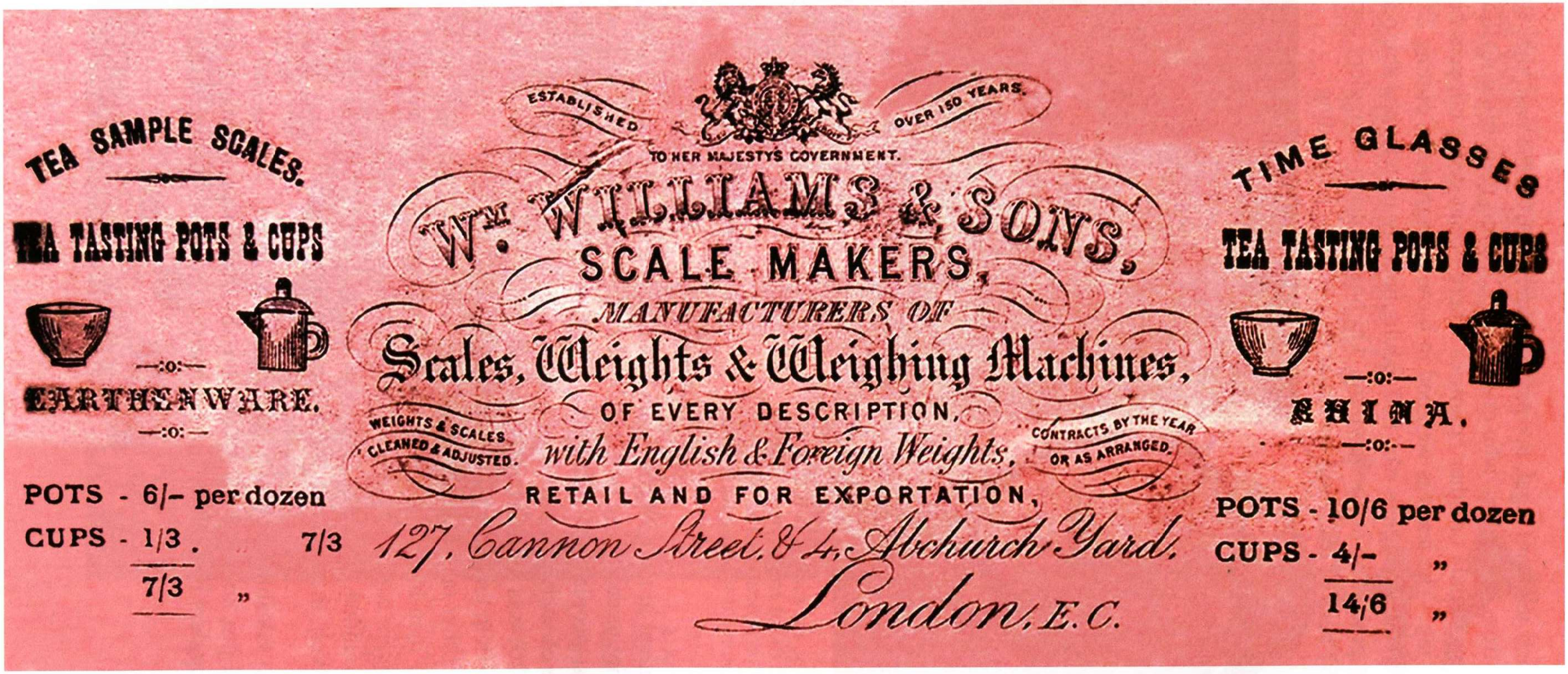
127, ~~71.~~ Cannon Street, & 4, Abchurch Yard,

LONDON.

Scales with English & Foreign Weights for Exportation.

IMPERIAL STANDARD MEASURES & WEIGHTS FOR CORPORATIONS. TOWNS, &c.

Figure 12. ▲▲ This trade card was stuck into the box shown on the cover. The two premises were joined at the rear, but could be accessed from either direction. 71 Cannon St was renumbered in 1866, when Cannon St was extended. William was dead by 1869, so this scale was presumably made between 1866 and 1869.



TEA SAMPLE SCALES.

TEA TASTING POTS & CUPS

—:o:—

EARTHENWARE.

—:o:—

POTS - 6/- per dozen

CUPS - 1/3 . 7/3

7/3 „

ESTABLISHED OVER 150 YEARS.

TO HER MAJESTYS GOVERNMENT.

Wm. WILLIAMS & SONS,

SCALE MAKERS,

MANUFACTURERS OF

Scales, Weights & Weighing Machines,

OF EVERY DESCRIPTION,

WEIGHTS & SCALES CLEANED & ADJUSTED.

with English & Foreign Weights,

CONTRACTS BY THE YEAR OR AS ARRANGED.

RETAIL AND FOR EXPORTATION,

127, Cannon Street, & 4, Abchurch Yard,

London, E.C.

TIME GLASSES

TEA TASTING POTS & CUPS

—:o:—

CHINA.

—:o:—

POTS - 10/6 per dozen

CUPS - 4/- „

14/6 „

Figure 13. ⩓⩓ This trade label was stuck into a tea scale box that looked exactly the same as the one on the cover, except that it had no tea weight, but had instead a set of Avoirdupois weights from 4oz down to 4 grains. But the label was aimed at tea wholesalers who wanted to mix the teas that they had bought. The cups were for use in a tea taster's facility, as shown in figure 11, where 20 cups were laid out in a row.

As London was only divided into Postal areas such as E.C. in 1857, this label and two others that are virtually the same, had to be made between 1857 and 1885. Why did Williams have three batches of the same label prepared and printed in 18 years? It suggests that they made huge numbers of tea scales.
The label has "*Established over 150 years*", but William Williams & Sons were taken over in 1885. Working back 150 years takes us to 1735, well before the family went into scale-making. 1735 was only just after the master of the first Williams was born. So they were boasting about their connections three generations of scale-makers before William Williams was born.

The wholesalers should have bought their tea from legal, tax-paying sources, but in the past, they often were able to buy the tea more cheaply from smugglers, who evaded the Customs men, bringing the tea into England or Scotland from outlying islands or other countries where ocean-going clippers could unload their tea without having to pay tax. The tea was weighed in these foreign ports, putting 28 lbs of tea into each oilskin bag[7], and sold to the smugglers who had fishing boats or cutters, and shipped to beaches where there was no Customs post. The sixth weighing. On one occasion smugglers carried 23,000 lbs, that was 10,432 kilos or 857 bags of tea from one cutter on one night into hiding.

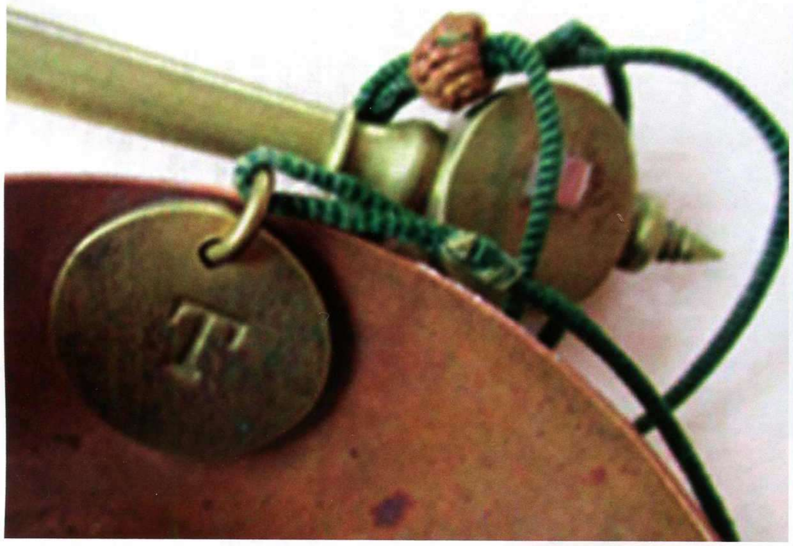


Figure 14. ΛΛ When required for tea-tasting, the scale was bought with a tea weight permanently attached to the round copper pan. The high quality of the scale can be seen in this tiny picture. The beam has box ends, and the green silk cords are decorated with a gold ball plaited round the top.

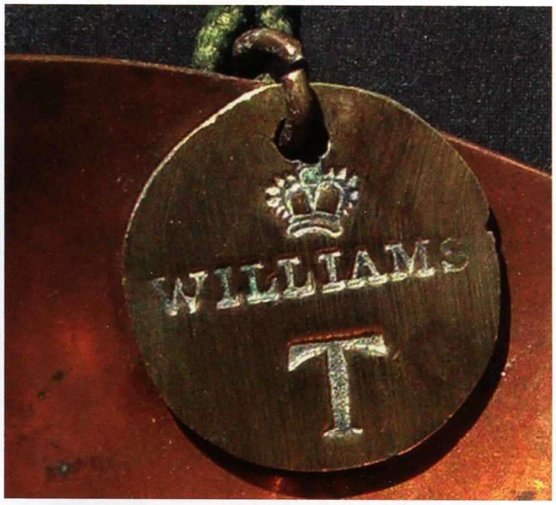
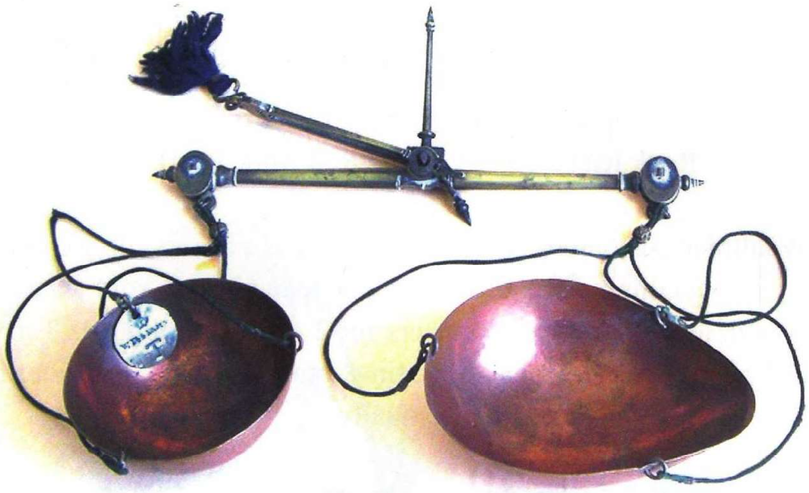


Figure 15. ΛΛ Another tea weight by Williams, stamped with a crown, WILLIAMS and T.

The smuggling gangs were quite confident in their illegal "work", but were always ready for a fight, so carried guns and other weapons, and intimidated any person who they thought might give them away to the authorities. Occasionally honest people were maimed or killed, or their live-stock killed. Nobody wanted to get on the wrong side of such villains. Even a reward of £500 in 1782 (equivalent to about £702,500 or $898,602 US in 2020) was insufficient to persuade people to alert the Excise Officers. Villagers did not dare to refuse to help unload a cutter, or refuse to lend their horse for the time it took to take the tea to be hidden (sometimes taken for several days.) Up to 50 horses might be needed to unload one cutter, and 350 men to man-handle the cargo (which included spirits, lace and other heavily taxed goods). When soldiers were called in to help the Customs men, they were usually outnumbered and defeated, with many wounded. If a smuggler was caught, and put on trial, the jury of local men would find him not guilty. Well, they didn't want their house burnt down.

The smugglers weighed out the tea into saleable-sized packets for their customers. The seventh weighing. One rector mentioned that he had just bought 6 lbs of tea from the smugglers. That was rather a lot to keep perfectly dry until the smugglers brought in another batch of tea. Maybe he shared it out amongst his parishioners.

Figure 16. ➢➢ One of the tea scales made by William Williams, more dilapidated than the one in the ISASC Museum, but identical in manufacture.



To quote Graham Smith's book, "*The smugglers were encouraged and financed by the local gentry, protected by compliant magistrates, condoned by the clergy,, aided and abetted by the ordinary people and at times facilitated by venal revenue officers. The illegal trade extended throughout Britain and permeated every level of society; the smuggled tea found its way into virtually all households from the most lowly to the highest.*" It is estimated that about 7,500,000 lbs of tea was smuggled into England and Scotland every year.

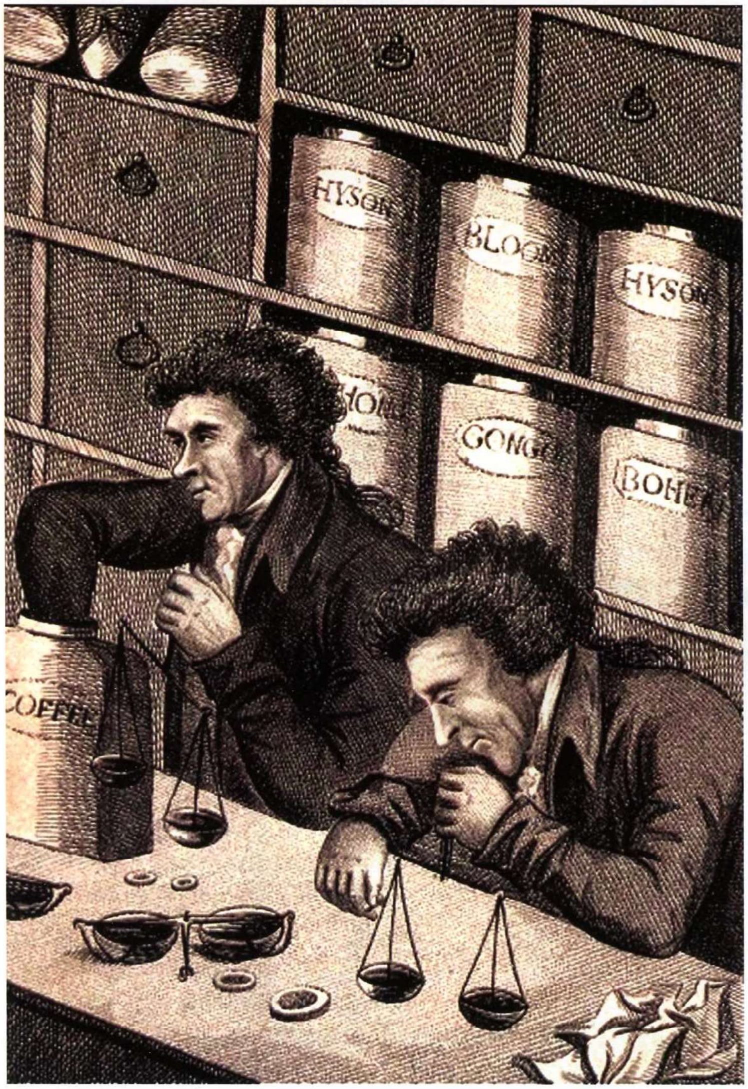
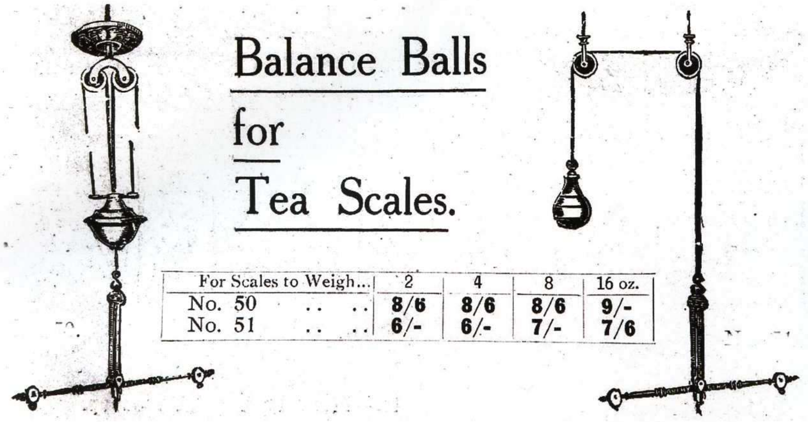


Figure 17. ⮜⮜ This advertisement was published in about 1830 by Daniel Barrett who was a Grocer & Tea Dealer at 41 Fetter Lane, London, between 1826 and 1880, sometimes with his brother Thomas. The brothers had four equal-arm scales on the counter, & flat weights. Behind them were the canisters for tea, Hyson, Blooms (??), Congou & Bohea. One brother was shown getting coffee out of a canister, while the other brother made up small paper packets. At the top left, sugar loaves were stored, as almost every hot drink was heavily sweetened, so every retailer sold sugar as well as tea, coffee & cocoa. Daniel advertised roasting & grinding in his own tripartite mill. "*They are the finest products of the Richest Plantations, ripened by the fertilising Waters of the Nile, the Indus, the Ganges and the Atlantic*." Good puff? Yes. Geographical knowledge? None!

So, the shops, by legal or illegal means, had supplies of tea, of various flavours, with exotic names. The commonest was Bohea, which the English consumed in huge quantities. This name was used indiscriminately by Europeans to cover many black teas such as Oolong and Lapsang Souchong, but is now used only for Rock tea (Yancha) or Big Red Robe tea (Ho Pong Dao).

Wealthier customers bought tea in pound packets, or some part of a pound, weighed in the shop. The eighth weighing. The East India Company agents sold tea packed in leaden canisters from an ounce to a pound, and sold empty canisters for 2 shillings (about £23 in 2020). Surviving bills recorded purchases of several pounds of tea at one time, but being paid long after the sale. Shop sellers had to trust their customers to pay their debts (eventually.)



Balance Balls for Tea Scales.

For Scales to Weigh...	2	4	8	16 oz.
No. 50	8/6	8/6	8/6	9/-
No. 51	6/-	6/-	7/-	7/6

Figure 18. ≺≺ W & T Avery made balance balls at the beginning of the 20th century, so that grocers could keep their tea scales above their heads, and just pull them down when required. The ball had to be heavy enough to hold the scales up out of the way, but the grocer would bring the scales down until the pans were just touching the counter, put in the weight and the tea, then lift the scales up an inch by hand to see whether the scales balanced. If Daniel Barrett had known about such gadgets, he would surely have bought four so that he didn't have four scales littering his counter, and he would have two hands to use for getting the tea between the cords. Note that Avery offered one for scales to weigh a mere 2oz.

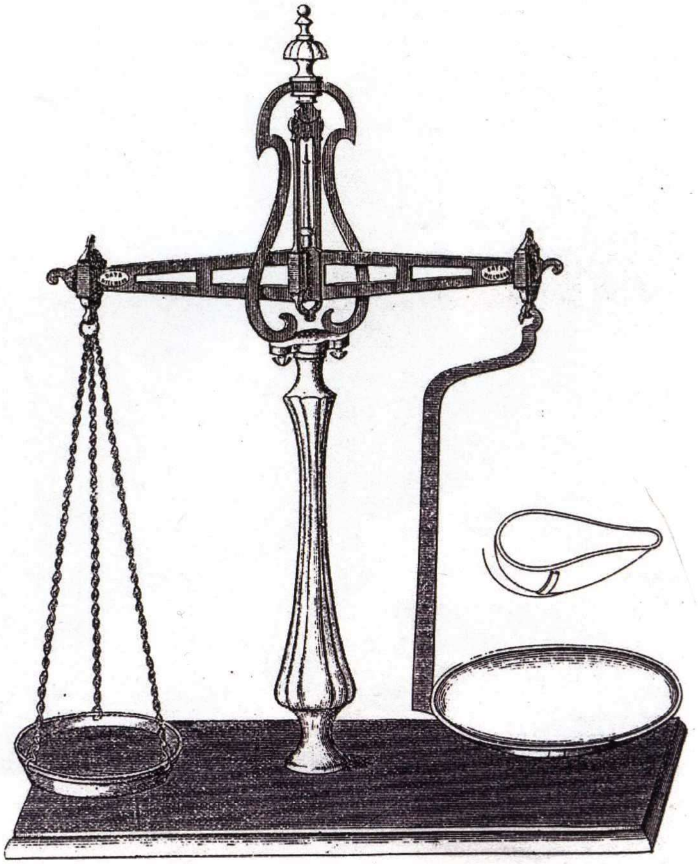


Figure 19. ➢➢ Day & Millward in 1889 offered counter scales for weighing tea in larger amounts, although they were accurate enough for very small amounts. With a 10 inch beam (254 mm) and a brass scoop, and box ends with agate bearings, they cost £2..6s..0. (the equivalent in 2020 of £1,000, so a big investment in shop fittings.) Then the grocer had to buy his weights for another 7s. and have them verified when the inspector came calling.

The richer customers used their tea once, then sent the wet leaves down to the kitchen, where the servants might wet them again to drink, or dry them thoroughly, and sell them to a shady character who weighed them, (the ninth weighing) gave the servant a token sum, and then either sold the second-hand leaves to the poorest people, or mixed them with new leaves to sell to unsuspecting customers.

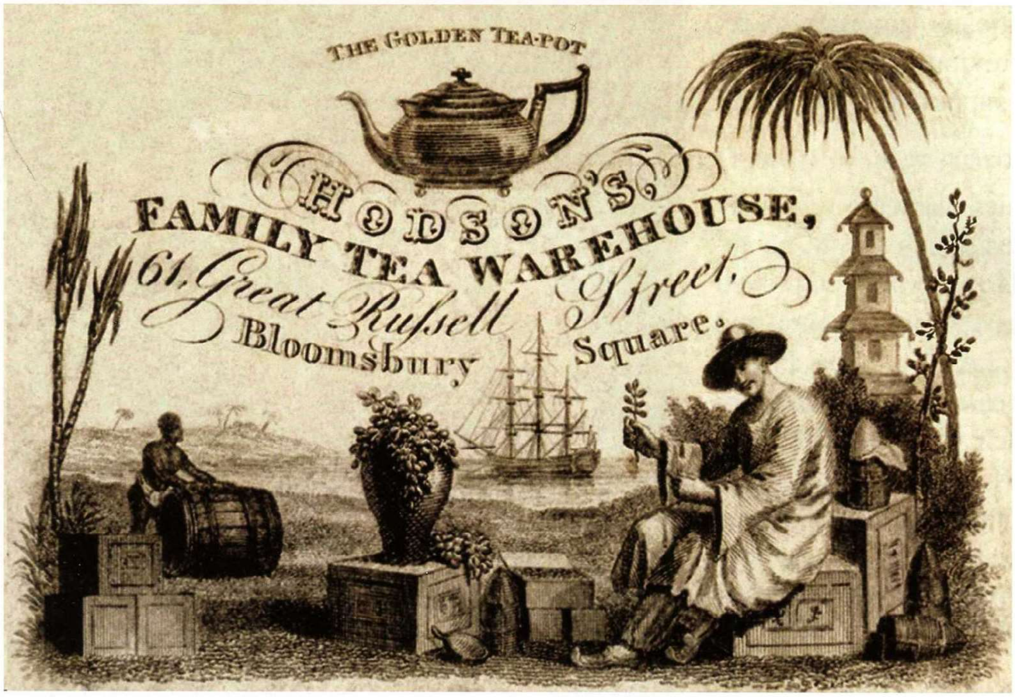


Figure 20. ≺≺ The charming use of trade cards in the 18th and early 19th century was to remind customers where they had bought their last packet of tea. The card might be just slipped in with the plain paper wrapping, or it could be handed to the customer with the bill written on the lower portion. Or it could be used as a receipt when the bill was paid. This card reminded people that Hodson's warehouse has a sign hanging outside of a golden teapot. He called it a Family Warehouse, but it was an ordinary grocer's shop selling tea, coffee, sugar and rum.

The shops that specialised in tea and coffee, called grocers, only sold dry goods, and the tea was nicely displayed in canisters on shelves behind the counter, out of reach of the light-fingered. See Figure 17. The grocer might offer a choice of Bohea, Congou, Caper, Pekoe, Twankay, Hyson, Onchain, and the very expensive Gunpowder tea, and even offer basic, better and best of each of these teas. So he might have 24 canisters of tea on his shelves, and stocks to replenish them in the rear of his shop.

Or the "shop" might be a widow selling tiny quantities from her one-room cottage, open all-hours for the convenience of her neighbours, being ignored by the authorities. Many of the tiny businesses stocked only a pound or two of tea, and we have to wonder whether she weighed it out, or sold it by the spoonful.

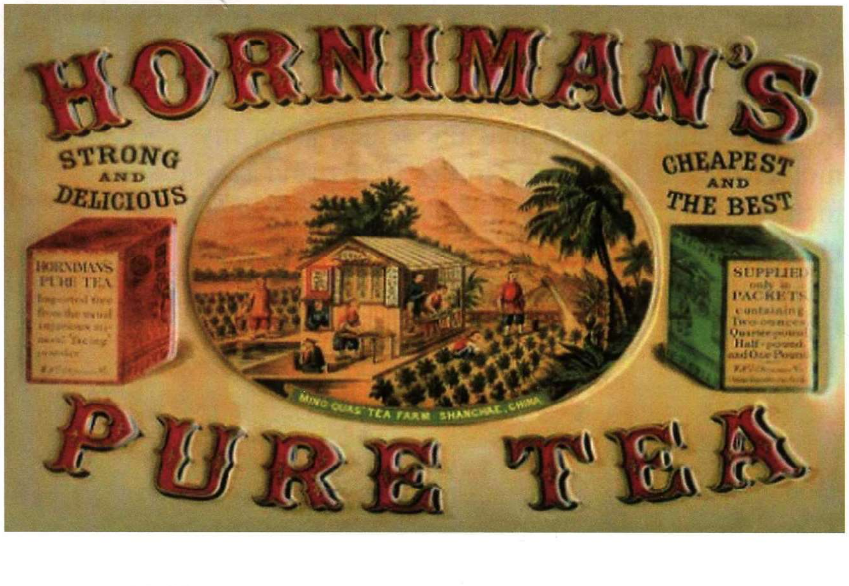


Figure 21. ➢➢ Horniman's, in 1826, were the first company to print boxes with a picture and pre-weigh the contents. There is no obvious type of tea in the packet, but below the central panel is written "Ming Qua's Tea Farm, Shenghai, China". The box on the right has "Supplied only in packets containing Two Ounces, Quarter Pound, Half Pound or One Pound.". The 2 oz boxes must have been very small. Did they have a tiny version of this picture on them?

Parliament was persuaded in 1784 to reduce the tea tax from 119% to 12½%, so from 1784 onwards, smugglers no longer found it profitable to bring tea into England. The Government collected the smaller tax in sufficient amounts to receive more money than previously, and had the benefit of not having to support Customs men chasing smugglers.

After about 1840, companies wanted a relatively consistent tea that their customers would be familiar with, and buy regularly, so they employed tea-tasters who sampled the various flavours, and combined them into one mixture. See Figure 11. To get a clear result, tea-testers had an identical quantity of tea in each cup, the weight of the T weight. (See Figures 14, 15 and 17). The tenth weighing. After tasting each variety, it was his job to suggest a mixture that was as nearly as possible identical to the previous year's tea. It took years to learn this skill.

Not only did the tester get reliable consistency, he would also warn if a chest had gone mouldy, or been contaminated by sea-water, and reject it, or he would point out that a chest contained tea that had been badly processed and had a weird flavour.

These mixtures were first used by Horniman's in 1826, who used enticing packets of pre-weighed tea, a packaging method later copied by Brooke Bond in about 1868. See Figure 21. The eleventh weighing. These packets brought an end, eventually, to the weighing of tea in front of the customer, but it was a slow decline, as I remember tea being spooned into the scales when my mother took me shopping in the 1940s, and I remember the joy of playing with the discarded chests, lined with lovely shiny tin-foil. What an intoxicating smell arose when we gleefully tore the foil out!

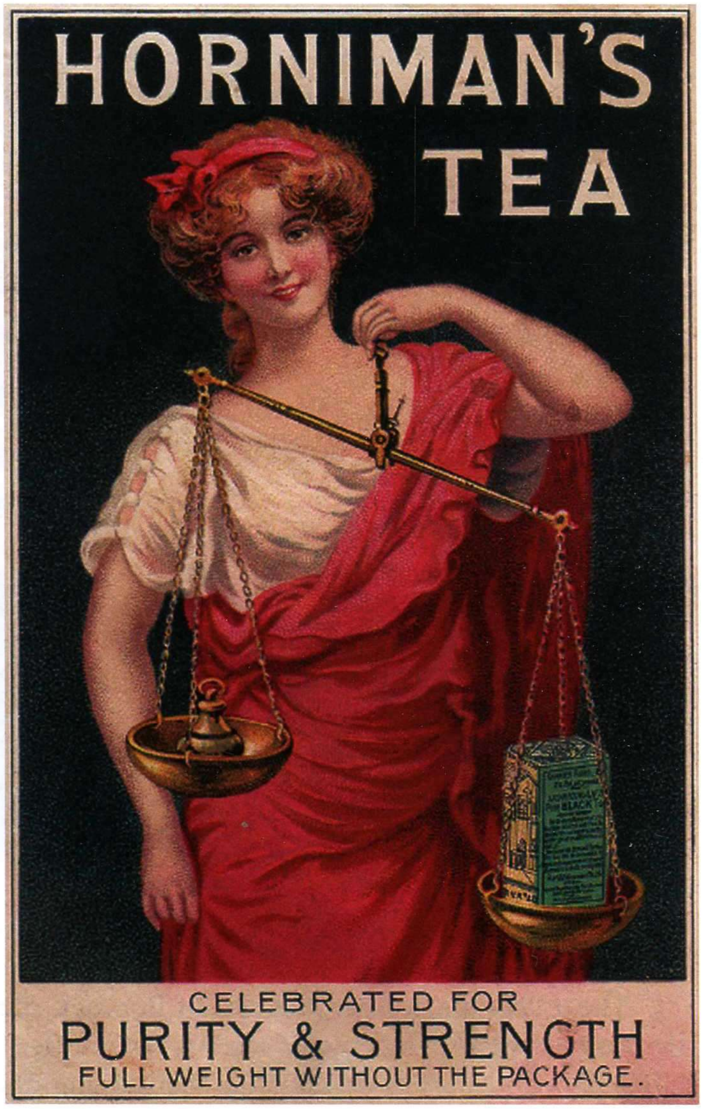


Figure 22. ▲▲ Horniman's advertisement stated "FULL WEIGHT WITHOUT THE PACKAGE" and showed the packet of tea heavier than the weight in the other pan. This was emphasised because the Inspectors of Weights & Measures had been arguing as to whether the immediate paper round a product counted as part of the expensive contents, and could thus be charged at the higher rate. Horniman's were proving that they weren't charging the customer for the wrappings at tea-prices. Horniman was just one of numerous Quakers who made substantial profits because they were known for their honesty.

Notes & References

1. It quickly went from a medicinal drink reputed to make men more lusty, among other things, to being a drink for even the poorest people. In 1767 John Hanway wrote of "labourers mending their roads drinking their tea" and "beggars are often seen drinking their tea".

2. The reason for the chests weighing 86 lbs net has not been investigated by any of the sources I found, but I suggest that the Chinese settled on a gross weight of 1 dan (100 jin) which traditionally was considered the maximum weight a man could carry on a shoulder pole (when split into two bundles). The Europeans probably accepted this gross weight of 110 lbs as reasonable and expected the contents to weigh 86 lbs.

3. The bricks were not of uniform weight, coming from Mongolia, Tibet and Afghanistan. As the bricks were often packed in bundles of 4 bricks, the resulting bundle could be around 26 lbs, and a yak could cope with about 10 bundles on each side. Men were employed to have up to 20 bundles on their backs as they walked the mountain trails. Photographs taken in around 1880 show them looking totally exhausted, and no wonder!

4. The quarterly auction by the East India Co. in March 1830 offered 7,800,000 lbs of tea, of which Bohea was 1,200,000 lbs, Congou, Campol, Pekoe & Suchong was 5,200,000 lbs, Twankee & Hyson Skin 1,500,000 lbs and Hyson 250,000 lbs. So the wholesalers needed to know their teas!

5. Counting stolen tea as the fifth weighing is perhaps wrong, as a very small percentage of tea was stolen!

6. Transportation was a convenient way for the British legal system to get rid of awkward prisoners. Before 1774, large numbers were sent to the American colonies as indentured servants, to work for no pay for the term of their sentence (either 7 or 14 years). Of course they got the worst jobs, lived in appalling conditions and were totally at the mercy of their master. Once they had completed their sentence, officially they were freed to do whatever they wanted or could find to do. After 1785 Australia was used as a penal colony, and 162,000 men, women and children prisoners were used there to build up the frail infrastructure.

7. 28bs was a convenient division of one chest's contents, being divided into three bags, just leaving a small amount to give to the foreign assistants. Each bag was a reasonable weight for each (reluctant) English villager to carry to the smugglers' hideout. A horse, donkey or pony could be loaded with one bag each side, and one bag across the top, leaving it slim enough to walk through hidden pathways, down steps into cellars, or thread through passages cut into rocks or cliffs.

This is a preliminary article, leading to a proper article by Jenny Hutchinson on the Williams family and their scale-making, to appear in a future EQM.

Reference books

Something to Declare, a 1000 years of Customs & Excise by Graham Smith, published by Harrap. 1980

The Best Butter in the World, a history of Sainsbury's by Bridget Williams, Ebury Press, 1994.

Shops & Shopkeeping by Hoh-Cheung Mui & Lorna Mui, 2nd edition, Published by Routledge 1989

Chemical News & Journal of Industrial Science, Vol. 29, 1874, Chemistry Applied to the Detection of Adulteration of Tea, by A. H. Allen,

Delftware, the Tin-glazed Earthenware of the British Isles, by Michael Archer, published by V & A Museum, 1997.

Moonfleet by J. Meade Falkner, written in 1898, about a 16 year old boy who gets tangled up with a smuggler in 1757. For relaxation and fun, read it! I loved it.

The History of the International Tea market, 1850-1945 by B. Gupta, gives this Chinese saying: "Tea is better than wine for it leadeth not to intoxication, neither does it cause a man to say foolish things and repent thereof in his sober moments. It is better than water for it does not carry disease; neither does it act like poison as water does when it contains foul and rotten matter."

Acknowledgements

With thanks for the help and guidance of Jenny Hutchinson, Kurt Beyreis, Mary Anne Murphy, Andrew Crawforth and Gregg Motter.

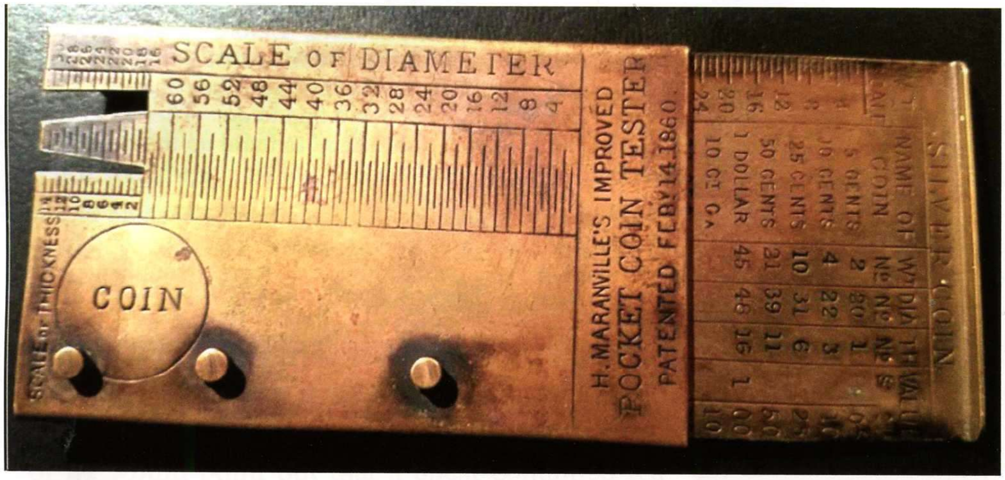
1860 Maranville Improved Pocket Coin Tester

BY MALCOLM MATHIAS

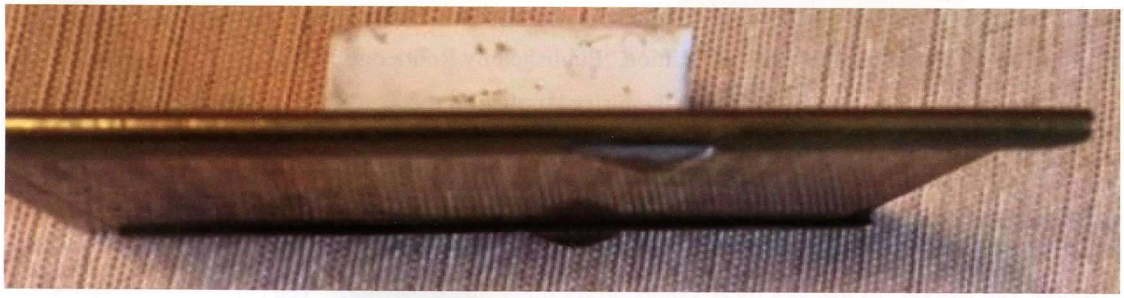
Maranville's second coin tester in 1860 was a pocket-sized brass device with a rectangular sliding brass beam. It was designed to check both US and Foreign coins – silver and gold.

Newman and Mallis described the 1860 coin tester as:

Sheet brass, steelyard type, rectangular, telescopic counter weight, sliding in and out of the body of the device. The device is marked along the left side with a scale of reference numbers for the weight. Across the rest of the face is a list of coins with weight reference numbers, diameters and thickness plus the value in U.S. money. Listed on the face are silver coins of the U.S. and several European countries. By turning the slide over, the weight reference numbers for U.S. and several European gold coins are available for checking weight. Source: Newman, Eric P. and Mallis, A. George, 1999, ***U.S. Coin Scales and Mechanical Counterfeit Coin Detectors***, CHP. IV: SEC. 4: P 1 [IV-4-3]

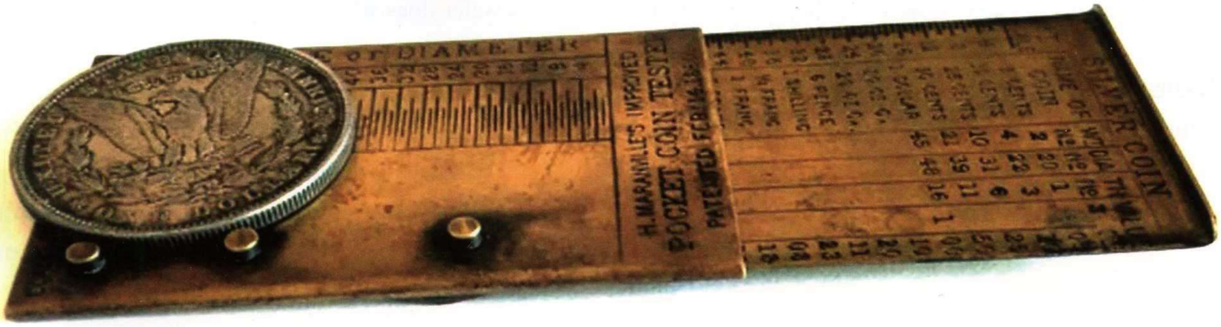


<< 1860 Maranville Improved Pocket Coin Tester
Bill James Collection.



<< The two protruding pivot legs sit flat on a table when balancing a coin.

ISASC Member Collection.

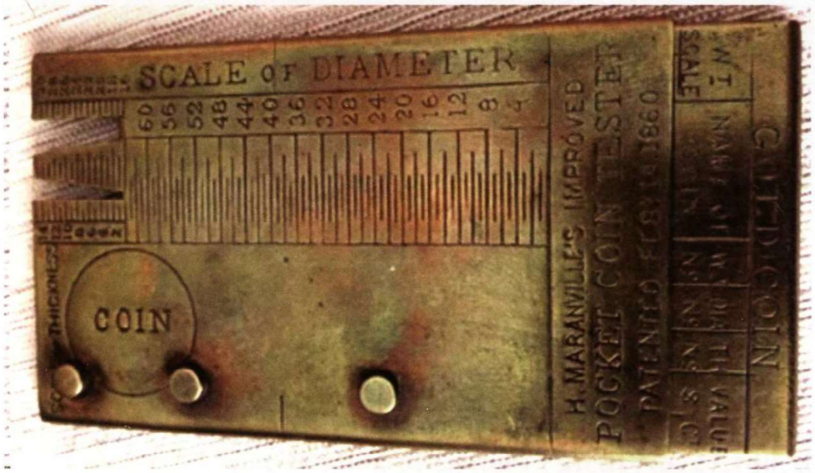


^^ US Silver Dollar on 1860 Maranville Improved Pocket Coin Tester.
Beam extended to weight position "45" for a silver dollar (129 mm long x 48 mm wide)
Note: the left hand sheath end with three coin rest lugs is 79 mm long x 48 mm wide.
Bill James Collection.

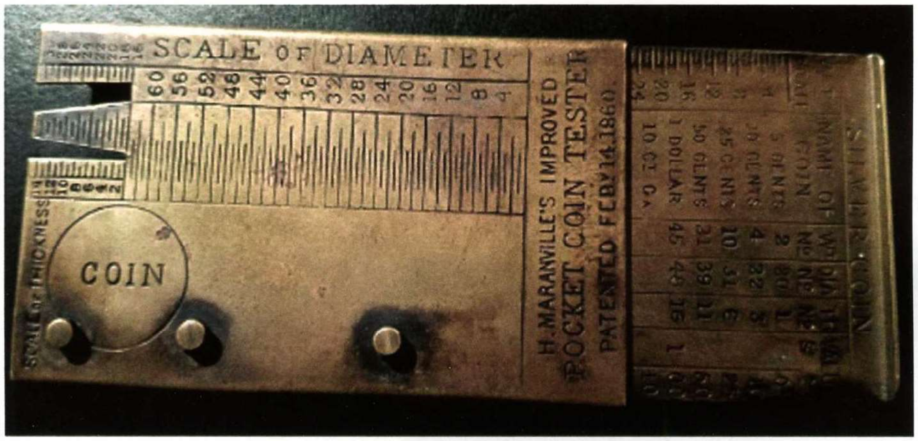
A genuine coin must satisfy three tests – weight, diameter and thickness. The 1860 Maranville Improved Pocket Coin Tester provides tests for these three dimensions:

The expected diameter for each coin value is on the **Scale of Diameter** along the side.
Thickness is tested in the two “V” **Scale of Thickness** notches cut into the ends.
The beam slides out to marked points on the **Weight Scale** to balance the coin.

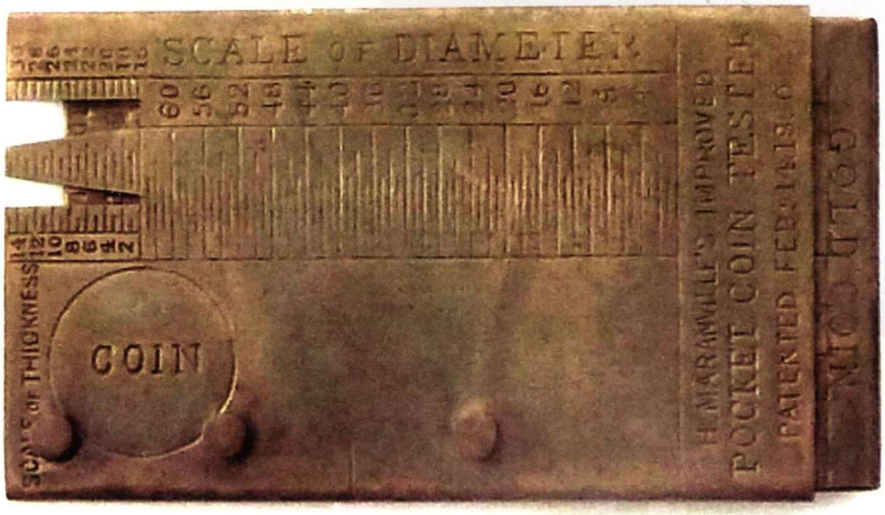
The tour of USA sponsored by EPNNES uncovered two different versions of the 1860 Maranville Improved Pocket Coin Tester held by collectors. There are five “known” 1860 Maranville Improved Pocket Coin Testers, but three have no writing near the third lug (near the middle).



1. ≺≺ ISASC Member Collection.



2. ≺≺ Bill James Collection.



3. ≺≺ Dan Hamelberg Collection.

Who was Harvey Maranville?

HARVEY MARANVILLE, Esq., a resident of Clinton, Ohio from 1833 until his removal to Akron, in 1861, served for five consecutive terms as justice of the peace of Franklin township, and in 1862 was appointed, by the Treasury Department, government inspector of liquors and oils for the 18th Congressional District, and afterwards commissioned as general gauger of the district; serving in that capacity until the winding up of that branch of the revenue service, here, in all about 15 years; by his skill and diligence saving the treasury many thousands of dollars, that a less scrupulous officer would have permitted to stick to the fingers of the gentlemanly operators whose products he had to pass.

Lane, Samuel A. 1892, ***Fifty Years and Over of Akron and Summit County***, Akron, OH., Beacon Job Department, p793

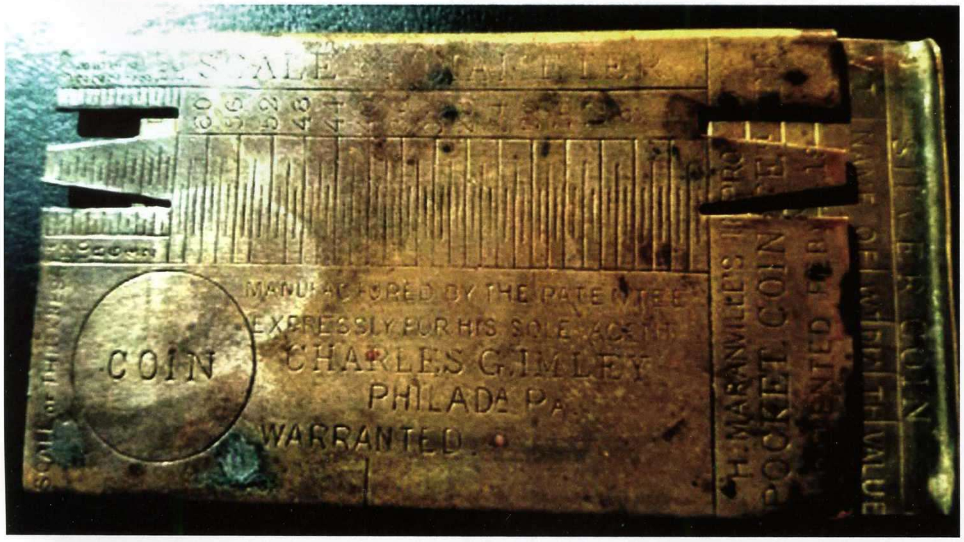
Maranville manufactured these five examples himself – there is no evidence of a third party manufacturer as there was with the 1857 Coin Tester made by Charles E. Staples in Worcester, Mass. Maranville then chose to appoint Charles G. Imley in Philadelphia as his sole agent and engraved at least two of his 1860 Coin Testers with the words:

> MANUFACTURED BY THE PATENTEE
> EXPRESSLY FOR HIS SOLE AGENT
> CHARLES G. IMLEY
> PHILADELP$^{\underline{A}}$ P$_{A}$
> WARRANTED

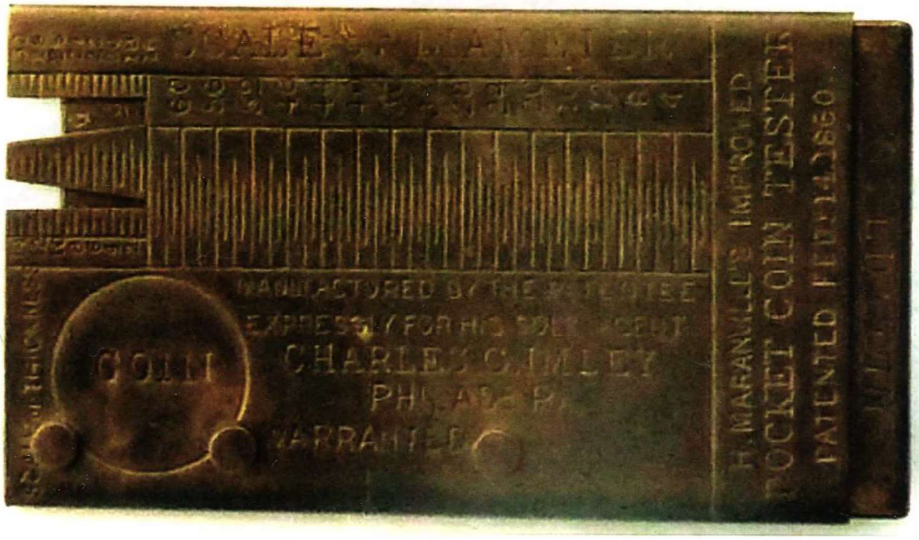
Imley appears to be a mis-spelling – it should probably be Charles Gordon Imlay, Secretary of the State Saving Fund in Philadelphia.

The Imlay Family appears as “Household 949” on the 1860 Census for 7th Ward Philadelphia City, Pennsylvania, United States.

Charles G. Imlay was born New Jersey 13 Sept 1819 and married (8 Dec 1843) Sarah A Coryell (born New Jersey 1822). They had four children.



4. << Bill James Collection.



5. ▲▲ Dan Hamelberg Collection.

UNITED STATES PATENT OFFICE.
H. MARANVILLE, OF CLINTON, OHIO.
COIN-DETECTOR.
Specification of Letters Patent No. 27,140, dated February 14, 1860.

To all whom it may concern:

Be it known that I, H. MARANVILLE, of Clinton, in the county of Summit and State of Ohio, have invented a new and Improved Coin-Detector; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which -

Figure l, represents a perspective view of my invention, arranged for testing gold coin.

Figure 2, is a plan or top view of the same, arranged for testing silver coin.

Figure 3 is a longitudinal vertical section of the same.

Similar letters of reference in the three views indicate corresponding parts.

This instrument is designed for testing the weight and the dimensions viz: diameter and thickness, of gold and silver coin, and my invention consists in combining a slide marked with suitable scales with a plate which is furnished with two knife edges on its under side and with two projections above in such a manner that the standard weight of a certain coin placed against the two projections on the upper side of the plate turns the same on the above named edges, and raises the slide, when the latter is drawn out to a certain point which is marked to correspond to the coin in question, said plate being also furnished with a scale to test the diameter, and with incisions or notches to test the thickness of various coins, the whole being so arranged as to make a new and improved article of manufacture.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Fig. 1

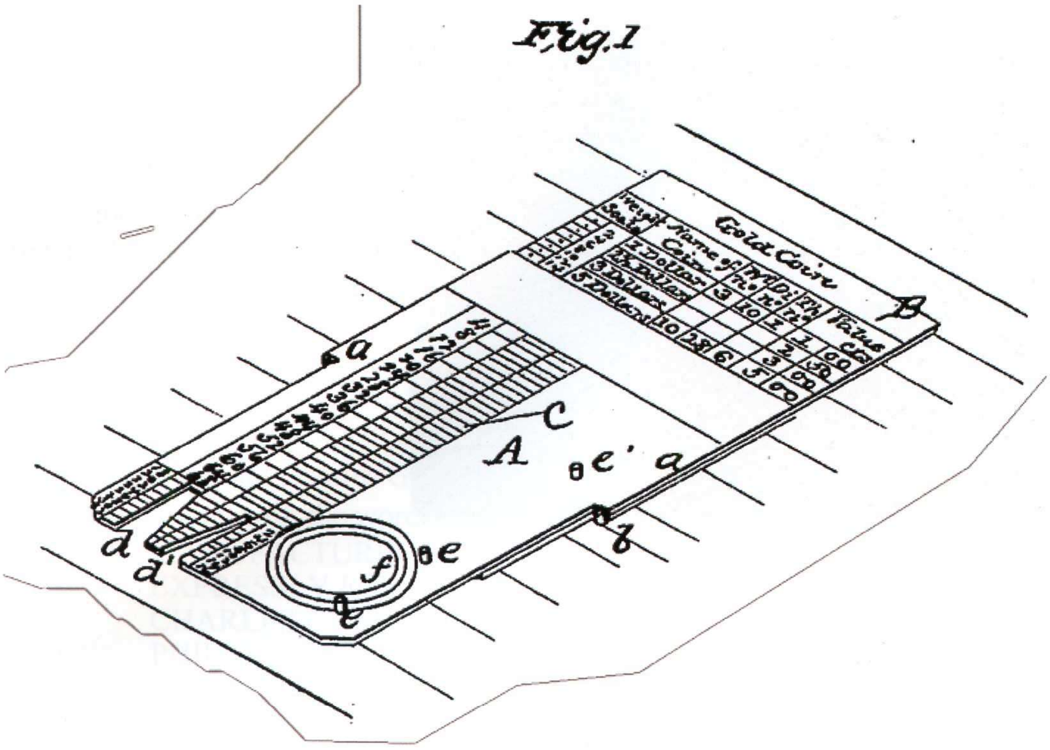


Figure 1. AA a perspective view, arranged for testing gold coin.

A represents a plate of sheet-brass or any other suitable material, the edges ***a*** of which are turned over for a little less than one half the length of the plate, so as to form guides for a. slide ***B***. Each of the edges ***a*** is also turned down so as to form the two knife edges ***b*** which are so situated that a line drawn through them, divides the plate in two unequal parts, leaving that part to which the guides ***a*** are attached, the lightest. The upper surface of the plate ***A*** is marked with the diameter scale ***c*** which is Obtained by dividing two inches into 64 parts or degrees, 1/32 of an inch each and numbered from the inner end of the scale toward the outer edge of the plate.

On the outer end of the plate ***A*** are two incisions ***d***, ***d'***, one half inch deep, each, to form the scale of thickness. These incisions are tapering, and they are so formed that the inner end of the largest incision ***d*** is equal in width to the outer end of the smallest incision ***d'***, both together in fact forming one continuous incision of one inch in depth. The large end of the incision ***d*** is 19/110 or 38/220 of an inch wide, and the small end of the incision ***d'***, is 7/220 of an inch in width. The whole space from the small end of the incision ***d'***, to the large end of the incision ***d***, is divided into 32 parts, marked with figures from 1 to 32. No. ***l***, is 7/220 in width, leaving 31/220 to be divided into 31 parts of 1/220 of an inch each, as clearly shown in Figs. 1, and 2, thus making one degree in diameter scale 6 and 7/8 times as large as one degree in thickness scale. Two studs or pins ***c*** are secured in the top surface of the plate ***A***, and a circle or a series of concentric circle ***f***, indicate the place which the coin has to occupy in order to test its weight as will be hereinafter more fully explained. An extra pin ***e'*** is inserted into the plate at a greater distance from its outer edge for the purpose of testing slug, or any other coin too heavy to be tested between the studs ***e***.

Fig.2

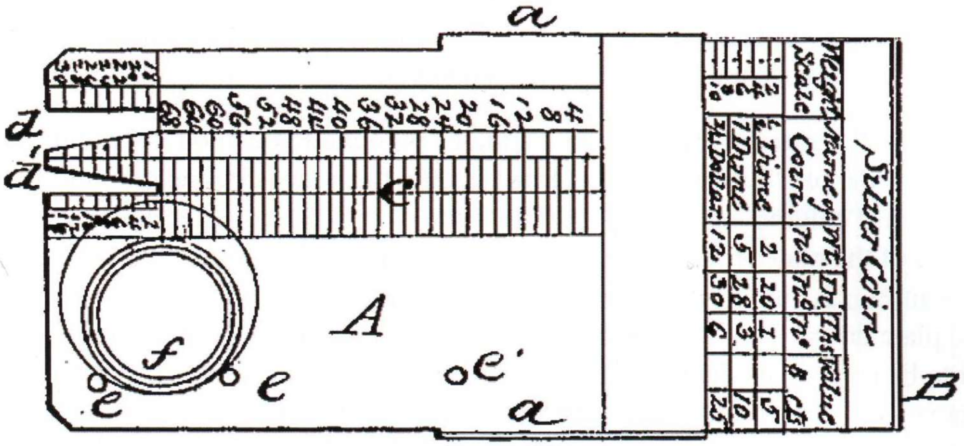


Figure 2. a plan or top view, arranged for testing silver coin.

Fig. 3

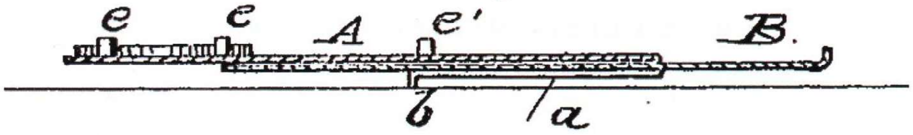


Figure 3. ⩓⩓ a longitudinal vertical section.

The slide ***B*** which moves quite easy between the guides ***a***, is marked on both sides with different scales. One side is intended for gold and the other for silver coin, and each side is divided lengthwise into 7 columns:

- The first column is for the weight scale and it is marked "***Wt. scale***" over head and numbered from the head downward, ***2, 4, 6, 8*** etc.
- The second column is for the names of coin, and it is marked accordingly "***NAME OF COIN***", overhead.
- The third column is for the numbers of the first column, corresponding to the weight of the different coins, the names of which are marked in the second column, and it is marked ***Wt. No.*** (weight number) over head.
- The fourth column is for the numbers of the diameters as taken from the scale ***c*** or the plate A, and it is marked "***Di. No***." overhead.
- The fifth column is for the thickness numbers, taken from the numbers on the sides of the incisions ***d d'***, to correspond to the thickness of the different coins, and it is marked ***Th. No.*** over head.
- The sixth and seventh columns are for giving the value of each coin in dollars and cents, and they are marked ***$*** and ***cts.*** over head.

By having one genuine coin of each kind, the different columns can easily be filled out, and the size of the instrument is such that it gives room for all the known coins of the civilized World.

The manipulations necessary to test a certain coin by my instrument will be best understood by one or two examples. The first and most necessary thing, especially in testing silver coin, is to try the sound or "jingle" of the coin, for there, are some spurious coins purporting to be silver which are composed mostly of lead or other base metal, the specific gravity of which is nearly the same as silver. If the "jingle" is bad, the coin need not be tested any further; it is spurious; but any of the metals generally used to give the coin "jingle" will be detected by the instrument, as all those metals are lighter than silver.

But to proceed further, if a quarter dollar is to be tested, and its "jingle" is found to be good, its weight is first tested. That side of the slide ***B***, marked "Silver coin" is turned up and the slide is pulled out until the weight number (***12***) found on the third column and opposite to the name of the coin (quarter dollar) comes exactly in line with the inner edge of the plate ***A***. The coin is now placed on the plate, so as to touch both the studs ***e***, as shown in red outlines in Fig. 2, and if the weight of the coin is correct, it will gently raise the slide ***B***, turning the outer edge of the plate down. This will not be the case, if the coin is spurious and too light. If the weight of the coin is found to be correct, its diameter is tested by placing it on the plate ***A***, so that its edge is precisely on the line drawn across said plate near to its inner end. The opposite edge of the quarter dollar, if the coin is good, will correspond with the mark ***30***, on the scale ***C***. In the same manner the thickness of the coin is tested by placing it edgewise into the incision ***d'***, and if the coin is good, it will enter this incision exactly to the mark ***6***, on its side.

One more example will be sufficient to make the use of my instrument clear to everybody. Suppose a 5 dollar gold piece is to be tested, and the slide is turned over so as to bring that side marked "***gold coin***" on the top. The weight of the coin is now tested in the same manner as above described, and if the slide is drawn out to the number ***16***, on the weight scale, and the 5 dollar piece is placed, against the studs ***e*** it will gently raise the slide, if its Weight is correct. The diameter of the coin and its thickness is now tested in the same manner as above described, and if the coin is good the diameter will be found to be ***28***, and its thickness ***6*** as marked in the corresponding columns on the slide.

It must be remarked that the thickness and the diameter of the same coins varies to some extent. My instrument is marked according to the latest standard coins of the various denominations, and at the same time the diameter scale is in such relation to the thickness scale, that one degree more on the one gives one degree less on the other, in order to retain the same weight so that my instrument can be used also for coins which vary from those coins which served in marking the instrument.

What I claim as new, and desire to secure by Letters Patent, as a new article of manufacture, is,

> The arrangement of the plate ***A*** with the diameter scale ***c***, and incisions ***d, d'***, and with knife edges ***b***, in combination with the slide ***B***, marked on one side for ***gold***, and on the other side for ***silver*** coins, as herein described, and operating in the manner and for the purpose specified.

H. MARANVILLE. Witnesses CHAS. RINEHART, W. M. HEFFELMAN.

Maranville lists the value of 20 gold coins on the brass slide, but provides size details (weight, diameter & thickness) for only six American gold coins. He provides no size details for the other 14 gold coins, including the foreign coins.

GOLD COIN

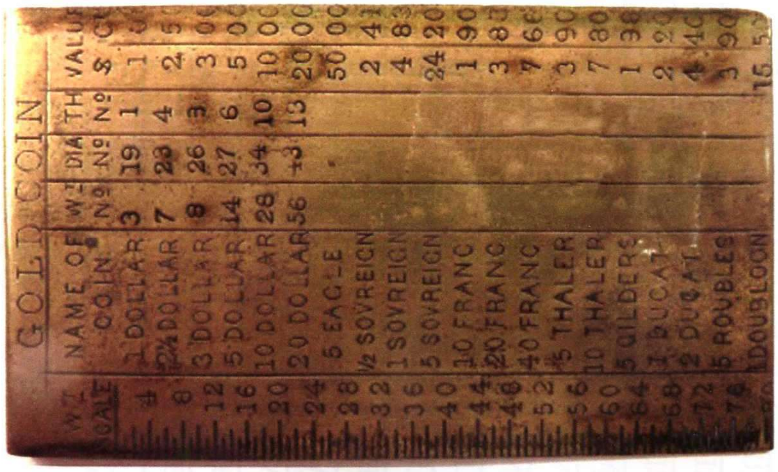
WEIGHT SCALE	NAME OF COIN	WT NO	DIA NO	TH NO	VALUE $	VALUE CTS
- 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80	1 DOLLAR	3	19	1	1	00
	2 ½ DOLLAR	7	23	4	2	50
	3 DOLLAR	8	26	3	3	00
	5 DOLLAR	14	27	6	5	00
	10 DOLLAR	28	34	10	10	00
	20 DOLLAR	56	43	13	20	00
	5 EAGLE				50	00
	½ SOVREIGN				2	41
	1 SOVREIGN				4	83
	5 SOVREIGN				24	20
	10 FRANC				1	90
	20 FRANC				3	80
	40 FRANC				7	60
	5 THALER				3	90
	10 THALER				7	80
	5 GILDERS				1	90
	1 DUCAT				2	20
	2 DUCAT				4	40
	5 ROUBLES				3	90
	1 DOUBLOON				15	50

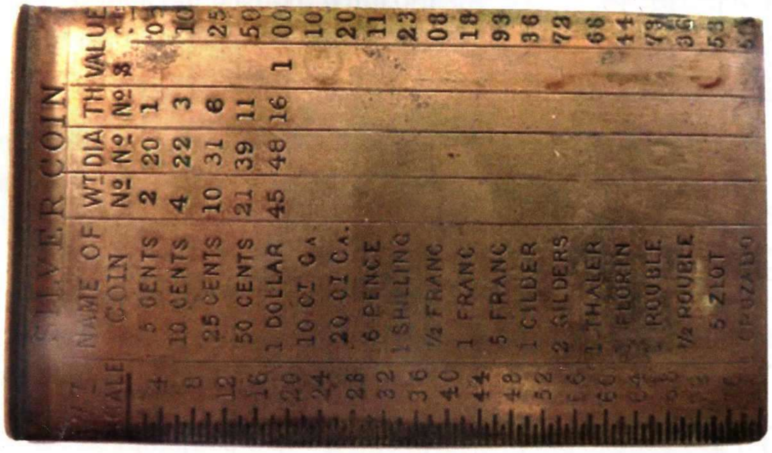
SILVER COIN

WEIGHT SCALE	NAME OF COIN	WT NO	DIA NO	TH NO	VALUE $	VALUE CTS
- 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80	5 CENTS	2	20	1		05
	10 CENTS	4	22	3		10
	25 CENTS	10	31	6		25
	50 CENTS	21	39	11		50
	1 DOLLAR	45	48	16	1	00
	10 CT CA					10
	20 CT CA					20
	6 PENCE					11
	1 SHILLING					23
	½ FRANC					08
	1 FRANC					18
	5 FRANC					93
	1 GILDER					36
	2 GILDERS					73
	1 THALER					66
	1 FLORIN					44
	1 ROUBLE					73
	½ ROUBLE					36
	5 ZLOT					53
	1 CRUZADO					50

Similarly, Maranville lists the value of 20 silver coins on the brass slide, but provides size details (weight, diameter & thickness) for only five American silver coins. He provides no size details for the other 15 silver coins, including the foreign coins.

By having one genuine coin of each kind, the different columns can easily be filled out, and the size of the instrument is such that it gives room for all the known coins of the civilized World.





Maranville suggests that the user of his Improved Pocket Coin Tester only needs one genuine coin to enable the user to fill in the size details of that genuine coin for themselves – how does the user know that their coin is genuine without Maranville (or someone else) providing the size details of a genuine coin? This appears to be an unfinished device, but the details on Patent No 27,140 are clear. Did Maranville expect people to buy a "counterfeit coin detector" that only provided the details for American coins?

The American Civil War

American History could have played a part in the seemingly unfinished Maranville Improved Pocket Coin Tester – the American Civil War erupted on April 12, 1861 when the Confederate Army opened fire and captured Fort Sumter in Charleston Bay.

During the American Civil War, the State of Ohio played a key role in providing troops, military officers, and supplies to the Union Army. Due to its central location in the Northern United States and burgeoning population, Ohio was both politically and logistically important to the war effort. Despite the State's boasting a number of very powerful Republican politicians, it was divided politically. Portions of Southern Ohio followed the Peace Democrats and openly opposed President Abraham Lincoln's policies. Ohio played an important part in the Underground Railroad prior to the war, and remained a haven for escaped and runaway slaves during the war years.

The third most populous state in the Union at the time, Ohio raised nearly 320,000 soldiers for the Union army, third behind only New York and Pennsylvania in total manpower contributed to the military and the highest per capita of any Union state. Several leading generals were from Ohio, including Ulysses S. Grant, William T. Sherman, and Philip H. Sheridan. Five Ohio-born Civil War officers would later serve as President of the United States.

The state was spared many of the horrors of war as only two minor battles were fought within its borders. Ohio troops fought in nearly every major campaign during the war. Nearly 7,000 Buckeye soldiers were killed in action. (Source: https://en.wikipedia.org/wiki/Ohio_in_the_American_Civil_War)

By the spring of 1865 all the principal Confederate armies surrendered, and when Union cavalry captured the fleeing Confederate President Jefferson Davis in Georgia on May 10, 1865, resistance collapsed and the war ended. The long, painful process of rebuilding a united nation free of slavery began.
(Source: Dr. James McPherson, A Brief Overview of the American Civil War, The American Battlefield Trust.)

One of the Buckeye soldiers killed in action during the American Civil War was Jay Maranville (13 Oct 1843 – 11 Jan 1864), one of the sons of Harvey and Nancy Maranville:

From the 104th---Death of Jay Maranville*....We were at Strawberry Plains, two weeks, and while there, Jay Maranville, a member of our Company died. He was one of the best little soldiers in the regiment. He was a son of Harvey Maranville Esq., of Akron. I think it is my duty to state that Capt. Ford had everything done for him that could be, under the circumstances: visited him often, and saw that he was not neglected. But all that a kind Captain, good nurses, and our Regimental Surgeons could do was to no avail. On the evening of the 11th inst, his sufferings ended, death had claimed another victim, and all that was left of the little soldier and patriot, was straightened for the grave. His comrades dug his grave under a clump of cedar trees upon the banks of the beautiful Holston, and the whole Company followed him to his last resting place, performed the last sad tribute of a soldier's love, and with heavy hearts returned to our camping ground...*

Written Jan 16, 1864 near Knoxville, TN, from a member of Co. H, 104th, Ohio Volunteers to Samuel Lane, editor of the Summit Beacon. Appeared in the *Summit County Beacon*, Thursday 4 Feb 1864.

HARVEY MARANVILLE (19 Mar 1812-12 Jan 1889)

No	Name	Birth	Death	Burial
H	Harvey Maranville	19 Mar 1812 Poultney, Rutland County, Vermont, USA	12 Jan 1889 (aged 76) Akron, Summit County, Ohio, USA	Glendale Cemetery Akron, Summit County, Ohio, USA
W	Nancy Harbaugh Maranville	7 Feb 1816 Fayette Co Pennsylvania	18 Dec 1886 (aged 69–70)	Glendale Cemetery Akron, Summit County, Ohio, USA
Harvey and Nancy married 1 Nov 1837 in Pomeroy, Meigs, Ohio and had 10 children				
1	Franklin Maranville	12 Oct 1838 Clinton, Summit County, Ohio, USA	22 Aug 1926 (aged 87) Barberton, Summit County, Ohio, USA	Clinton Cemetery Clinton, Summit County, Ohio, USA
2	Emily Maranville Gray	9 March 1840 Clinton, Summit County, Ohio, USA	27 Apr 1909 (aged 69) Lake City, Missaukee County, Michigan, USA	Reeder Cemetery Missaukee County, Michigan, USA
3	Esther Maranville Crane	1 Apr 1842 Clinton, Summit County, Ohio, USA	3 Nov 1918 (aged 76) Akron, Summit County, Ohio, USA	Glendale Cemetery Akron, Summit County, Ohio, USA
4	Jay Maranville	13 Oct 1843 Clinton, Summit County, Ohio, USA	11 Jan 1864 (aged 20) Strawberry Plains, Jefferson County, Tennessee, USA	Lost at War: Buried by his comrades on the banks of the Holston River in Tennessee, USA
5	Bloomy Irene Maranville McCormick	30 Dec 1845 Clinton, Summit County, Ohio, USA	23 Feb 1911 (aged 65) Cuyahoga Falls, Summit County, Ohio, USA	Oak Hill Cemetery Millersburg, Holmes County, Ohio, USA
6	Nancy Maranville	February 1848 Clinton, Summit County, Ohio, USA	March 1848 Clinton, Summit County, Ohio, USA	Clinton Cemetery Clinton, Summit County, Ohio, USA
7	Harvey Maranville	13 March 1849 Clinton, Summit County, Ohio, USA	1929 (aged 79–80) Colorado, USA	Crown Hill Cemetery Wheat Ridge, Jefferson County, Colorado, USA
8	Amelia Maranville Latimer	1 June 1852 Clinton, Summit County, Ohio, USA	18 Aug 1927 (aged 75) Orange Township, Ashland County, Ohio, USA	Nankin Cemetery Nankin, Ashland County, Ohio, USA
9	Ida Maranville	24 Jan 1855 Clinton, Summit County, Ohio, USA	2 Sep 1876 (aged 21) Cass County, Michigan, USA	Glendale Cemetery Akron, Summit County, Ohio, USA
10	Julia Maranville	February 1858 Clinton, Summit County, Ohio, USA	March 1858 Clinton, Summit County, Ohio, USA	Clinton Cemetery Clinton, Summit County, Ohio, USA

source: https://www.findagrave.com/memorial/92104437/harvey-maranville

The U.S. Census of June 1, 1880 lists the Maranville family living at 105 Wood Street, Akron. The family members listed were:

Name	Role	Sex	Age	Occupation	Birthplace
Harvey Maranville	Self	Male	68	At Home	Vermont, USA
Nancy Maranville	Wife	Female	64	Keeps House	Pennsylvania, USA
Harvey Maranville	Son	Male	31	Works at Forge	Ohio, USA
Esther Maranville	Daughter	Female	38	Dressmaker	Ohio, USA
Amelia Maranville	Daughter	Female	28	At Home	Ohio, USA
F H Maranville	Grandson	Male	14	At Home	Michigan, USA

In 1862 Harvey Maranville was appointed, by the treasury department, government inspector of liquors and oils for the 18th Congressional District, and afterwards commissioned as general gauger of the district; serving in that capacity until the winding up of that branch of the revenue service, here, in all about 15 years.

Harvey Maranville turned 65 years old on 19 March 1877 and it appears that he retired to life at home. The US Census of June 8, 1880 has him aged 68 and "At Home."

We know Maranville stayed busy at home during that 1877 to 1880 period because he invented his third coin tester in 1878 – the Dial Coin Tester was Patented on April 30, 1878.

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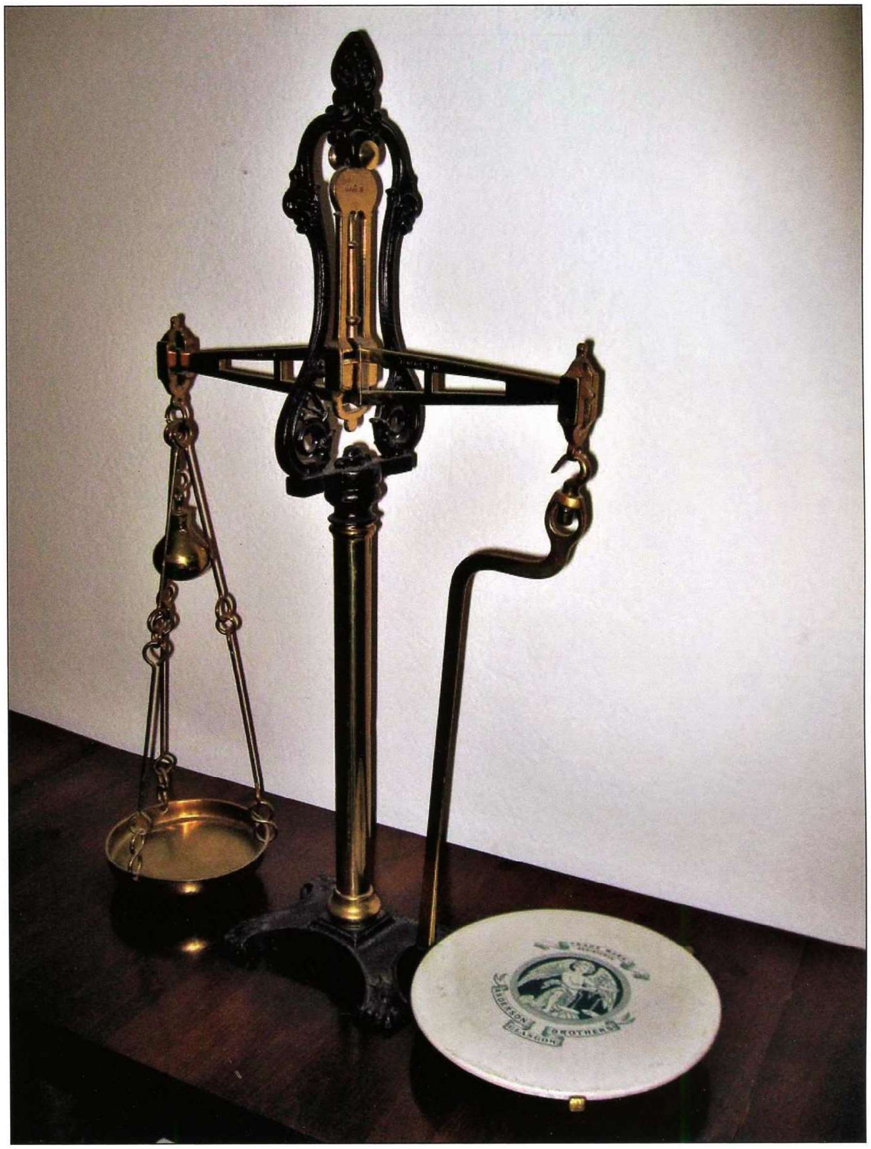
A Scale, a Friend, Fate and a Connection with the Past

BY ERIC & JUDY SOSLAU

When a friend found out that my husband and I collect antique scales, she emphatically insisted we "adopt" a scale she had. It was used for display years before in the women's clothing store owned by her parents. The scale was large and did not fit the style of her home; but it had emotional memories for her; so she had kept it, storing it in pieces in a box in a closet. Although she didn't know how to put it together, she thought all the parts were there except for the plate which had been broken long ago.

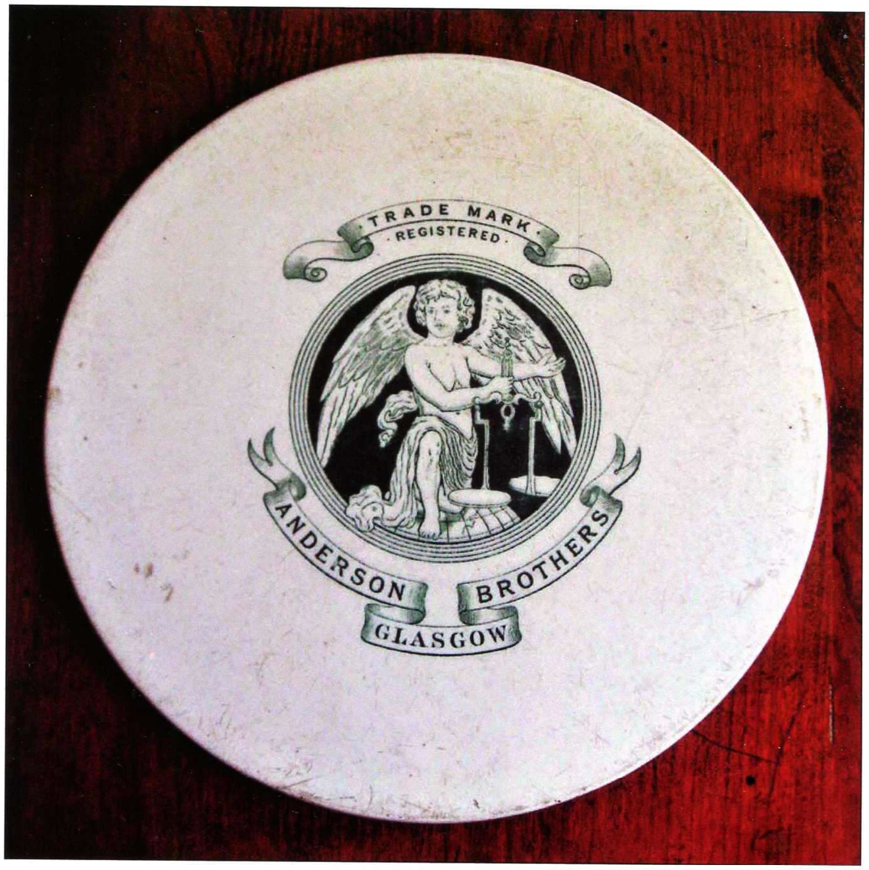
Once my friend started talking about her parent's store, I was able to put two and two together. I definitely remembered the store from many, many moons ago when I was in college. Very often I walked from campus to downtown just to shop there. Although I didn't remember the scale specifically, I realized that during one of my trips I had probably seen it in the store. Now I also had an emotional connection to the scale. This clinched our decision to accept her offer.



After picking it up and bringing it home, we set about putting the scale together. That part went relatively quickly, as indeed all the pieces were there.

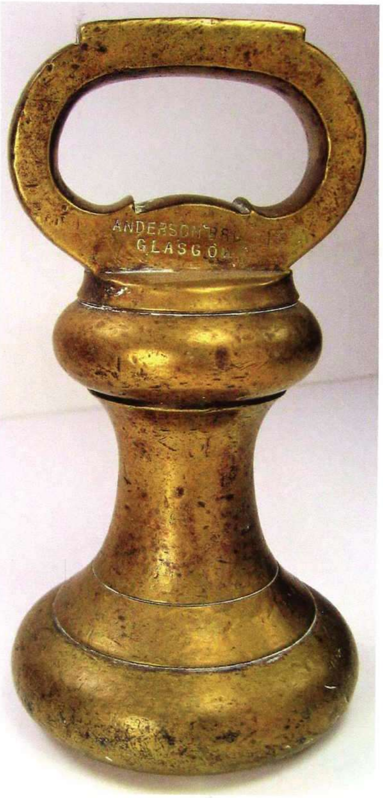
With its 32" height, the equal-arm beam scale displayed beautifully on the sideboard in our dining room. The name of the maker, Anderson Brothers of Glasgow, was inscribed on its eye-catching 17" wide brass beam. We were very happy with our new acquisition.

The search for a replacement plate began immediately. We would have been happy with any plate – no matter what was on it – to complete the scale. Our first step was to look at the plates we already had. In conjunction with our scales, we collect odd scale plates of various sizes imprinted with different emblems and manufacturers' names. However, even though we have a fair number of these, none were the correct size.



So, the hunt was on! We started with perusing online auctions figuring that would be our best bet. This is always a bit of a risk, because even if the size is given in the description, it is not always accurate or sometimes even the right size doesn't fit on the scale correctly. Knowing that single scale plates do not come up for sale that often, we assumed it would take a while to find one.

However, much to our astonishment, within only a few weeks my husband's daily review of eBay paid off big time when he found an Anderson Brothers scale plate, purportedly the exact size, offered for sale. After putting in the winning bid, we waited anxiously for its arrival not knowing for sure if it would work. You can imagine our extreme delight when we set it in place and it fit perfectly. Considering the chances of finding any plate that would work, much less one from the exact maker and in excellent condition, we took it as a sign that it was meant to be.



This idea of fate was reinforced later that year when we found through another auction a 7 pound bell weight to go with the scale. The handle on the weight is stamped Anderson Bro Glasgow. It matches wonderfully since "TO WEIGH 7 LB" is engraved on the beam of the scale.

To this day the scale remains displayed in our dining room. With its prominent presence, it often starts a conversation about weighing and measuring when we have new folks over who aren't aware of our deep-seated interest in collecting antique scales.

It also invokes good feelings with the connection to the friend who gave it to us. Years later she came by our house and saw it on display. She was gratified to know that her parents' scale was being well looked after. Little did she know of the chain of events she set in motion that first day she asked us to take it.